DOCUMENT RESUME

ED 099 048 JC 740 489

AUTHOR	Murphy, Norman L.
TITLE	An Assessment of Remedial Education for Vocational-Technical Students in Selected Postsecondary Institutions in Texas.
INSTITUTION	Texas Education Agency, Austin. Dept. of Occupational Education and Technology.; Texas Univ., Austin. Dept. of Educational Administration.
PUB DATE	74
NOTE	161p.
EDRS PRICE	MF-$0.75 HC-$7.80 PLUS POSTAGE
DESCRIPTORS	Academic Achievement; Community Colleges; Data Analysis; Demography; Grade Point Average; Literature Reviews; Locus of Control; Persistence; *Post Secondary Education; *Predictor Variables; Program Descriptions; *Remedial Instruction; Research Methodology; Self Concept; *Technical Education; Technical Reports; *Vocational Education
IDENTIFIERS	*Texas

ABSTRACT

The purpose of this investigation was to identify those demographic and programmatic (independent) variables which were the best predictors of student success in a remedial program, as measured by four different criterion (dependent) variables: grade point average, persistence, increase in internality in locus of control, and increase in self-concept. The demographic variables examined were age, sex, yearly family income, curriculum aspiration, and ethnic background. The programmatic variables isolated were individualized instruction, integrated vocational learning experiences, program focus on self-concept development, and volunteer instructors. In order to capture the programmatic variance unaccounted for by these selected variables, the program itself was regarded as a variable. The four programmatic variables examined were so highly correlated that individually they showed no significance. Together, however, they contributed a significant amount of variance in student GPA and changes in locus of control. Moreover, the only significant predictor of persistence was the remedial program which contained the most (three) program variables. Unidentified variables were operating in addition to the four specified to create this effect. No variables were found to be predictive of self-concept. Clearly, existing education technology is sufficiently powerful to enable high-risk students to succeed in postsecondary remedial programs. (Author/DB)

ED 099048

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AN ASSESSMENT OF REMEDIAL EDUCATION FOR VOCATIONAL-TECHNICAL STUDENTS IN SELECTED POSTSECONDARY INSTITUTIONS IN TEXAS

by

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Published by

The Office of School Surveys and Studies
Carl R. Ashbaugh, Ph.D., Director
Department of Educational Administration
The University of Texas at Austin

in cooperation with

Division of Occupational Research and Development
Department of Occupational Education and Technology
Texas Education Agency

1974

JC 740 484

A C K N O W L E D G M E N T S

Beyond the educational value of the exercise, writing a dissertation creates a keen awareness of one's dependence on and interedependence with his fellow human beings. In a very special way, my thanks go

To the individuals in the participating institutions who so generously assisted me throughout the project.

To John Roueche, not only for guiding this study, but especially for his caring.

To the rest of my committee, Carl Ashbaugh, Gary Borich and Reuben McDaniel and Michael Thomas, for their incisive perceptions and support in this investigation.

To L. D. Haskew, for his wise and thoughtful counsel throughout the past two years.

To Tom Cottingham and Oscar Mink, whose acquaintance during and since my internship has been a source of great pleasure, personally and professionally.

To my parents, Mr. and Mrs. LeRoy Murphy, who taught me the value of education.

And finally

To Betty and Matt, who not only endured, but flourished.

and

To Micah, who found his way home during the writing of the last chapter.

N. L. M.

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C H A P T E R I

INTRODUCTION

Background

Today's educational administrators are caught between the Scylla of declining financial resources and the Charybdis of a wide diversity of students entering a postsecondary educational system which has little experience in accommodating a heterogeneous population. Educationally disadvantaged students, who are now able to enter public two-year colleges because of the open door policy, constitute a significant new group of students in these institutions. Administrative decisions concerning program implementation for disadvantaged students are crucial, not only for the survival of this nation's educational institutions, but for the success of the students who enter them.

Remedial education is regarded by those who would keep the open door of postsecondary institutions from becoming a revolving door as a sine qua non (Roueche, 1968; Morrison and Ferrante, 1973). Vocational educators

share this value. A recent report for the Department of Health, Education and Welfare states that the leading reason for program discontinuance among vocational and technical students is academic difficulty. The report further states:

> Of greatest importance is the offering of special remedial coursework designed to assist the willing, financially able, well-motivated student who needs special help in foundation courses prior to entry into the regular vocational and technical program. (Miller and Gillie, 1970: 15, 16)

Until recently this conviction was more an affirmation of faith rather than a fact anchored in empirical research. As many researchers have demonstrated, little solid evidence exists to show that remedial programs in fact ameliorate known student deficiencies (Schenz, 1963; Blocker et al., 1965; Gordon and Jablonsky, 1967; Roueche, 1968; and Berg and Axtell, 1968). Roueche (1968) found that typical remedial programs were unsuccessful in remedying student deficiencies. Prior to Kirk's dissertation (1972), the literature evidenced little research about the effectiveness of remedial efforts in terms of students' academic performance, persistence and attitude.

In general there is a paucity of empirical research in the field of remedial education. Institutions

rarely use analytical research techniques to ascertain the effectiveness of their remedial programs. In fact, few institutions engage in systematic data collection about their remedial programs. According to a recent report of the Senate Interim Committee on Public Junior Colleges (1973) only 38.2 percent of the colleges report any follow-up of remedial students while they are in college. Only 37.9 percent do any survey of persistence. Several institutions do a pretest (65.3 percent) and posttest (63.2 percent), but these are cognitive in nature. No school reported testing that measured personal development. Ironically, developing a positive self-concept should be one of the chief objectives of any remedial program, given the types of students enrolled in them (Compensatory Education Project, 1971; Roueche and Kirk, 1973). The innovative programs which Roueche and Kirk studied focused on developing a positive self-concept for students. No measure was made, however, to ascertain the relationship between a positive self-concept and student success in a program.

Problem Statement

Kirk's dissertation (1972) made significant inroads in dispelling the darkness of educators about

remedial programs in two-year colleges. Briefly, he found that high risk students in remedial programs earned higher grades and persisted longer than high-risk students in nonremedial programs. On the basis of detailed program descriptions, he suggested program elements which facilitated student achievement. Remedial programs, in order to be successful, should have a separate division of developmental studies with its own staff and administrative head. Instructors should be volunteers with expertise in working with nontraditional students. Grading policies should be nonpunitive and instruction individualized. Racial composition of the staff should approximate that of the student population. Courses should carry college credit. The program should be two semesters in length and consist of mathematics, English, reading and writing and have provisions for students to enroll in courses outside developmental studies. Counselors and instructors should assist remedial students in making early and realistic career choices. Finally, institutions should alleviate the abrupt transition between developmental and regular college work.

Kirk's study, however, included only three urban community colleges whose programs were regarded as innovative. Moreover, this ground-breaking study made no

distinction between college transfer and vocational-technical students. The chief burden of this present study is thus clear: How effective are remedial programs for vocational-technical students? This question assumes a special importance with the realization that many people view vocational-technical education as the main avenue many students have for getting into the mainstream of economic life (Cross, 1972; Compensatory Education Project, 1971). Additionally, minority persons who are potential enrollees for vocational or technical programs indicate the attractiveness of such an alternative in their own future plans. A recent study of vocational education among Mexican-Americans in Texas sponsored by the Texas Education Agency (Schulman et al., 1973) indicated that these students ranked vocational-technical training at a postsecondary institution among their top three posthigh school alternatives, above other types of occupational training, e.g., union or government-sponsored. Dissenting viewpoints come from (1) more "militant" minority people who consider the emphasis on vocational-technical education as a palliative which precludes the more rapid upward social mobility a college transfer program could offer (Schulman et al., 1973); and (2), Jencks

(1972) and others who contend that this additional educational education will not result in a concomitant increase in socioeconomic rewards.

In addition to the basic question of program effectiveness for remedial students, the study will also ascertain how specified independent variables--previously unexamined--are related to the various criteria of student success (dependent variables) in the program. These independent variables include two basic types, demographic and programmatic.

No previous study of remedial programs has attempted to determine the significance of an array of demographic variables in predicting student success in a remedial program. In "systems" language, does the input determine output or are the educational processes of remedial programs sufficiently powerful to alter the expected output? In short, do remedial programs confound the predictions typically made on the basis of demographic variables? The demographic variables under consideration in this study are sex, age, ethnic background, yearly family income, and the type of curriculum a student hopes to enter upon completing the remedial program.

Neither has any study of remedial programs sought to isolate specific variables in the educational process

of the remedial programs that in fact contribute to student success independent of the student's demographic profile. This study will center on four programmatic variables: individualized instruction, volunteer teachers, focus on self-concept development, and vocational learning experiences that are integrated with traditional academic experiences. Kirk regarded the first three program variables as important contributors to student success in remedial programs. Moreover, studies attest to the significance of these variables in a variety of educational contexts. Career educators regard the fourth variable as important in remedial programs for vocational-technical students. While additional variables could have been selected, the relatively small size of this population forbade such. To capture additional variance in programs beyond that accounted for by these four variables, each program will be regarded as a variable.

Purposes

On the basis of the preceding discussion the chief purpose of this study is clear: to determine the significance of various process variables (program elements)

and certain input variables (demographic characteristics of students) in determining program output (student success).

Research Questions

The preceding purposes give rise to the following questions:

1. To what extent do specified demographic variables affect Grade Point Average?
2. To what extent do specified program variables affect Grade Point Average?
3. To what extent do different remedial programs affect Grade Point Average?
4. To what extent do specified demographic variables affect persistence?
5. To what extent do specified program variables affect persistence?
6. To what extent do different remedial programs affect persistence?
7. To what extent do specified demographic variables affect changes in locus of control?
8. To what extent do specified program variables affect changes in locus of control?

9. To what extent do different remedial programs affect changes in locus of control?
10. To what extent do demographic variables affect changes in self-concept?
11. To what extent do specified program variables affect changes in self-concept?
12. To what extent do different remedial programs affect changes in self-concept?

Operational Definitions

Remedial Program: In this study it means any educational program with a variety of services designed to upgrade, ameliorate or remedy student deficiencies to the point that a student can enter or succeed in a regular college credit program. "Remedial" has the same meaning as the following terms often found in the literature: guided, basic, directed, compensatory and developmental, even though the literature often makes distinctions between such terms. Pretechnical and prevocational refer to remedial programs designed exclusively for students who plan to enter a vocational or technical curriculum.

Although the point is not germane for this study, it is important to note that in the literature

"remedial" is often used vis-a-vis "developmental," where a basic distinction in philosophy is at stake. "Remedial" in this sense is a negative term which focuses on remedying student deficiencies. On the other hand, "developmental" is a positive term which implies program focus on building upon student capabilities (Bushnell, 1973).

Remedial Student: Educationally (and often economically) disadvantaged students who have a high potential for failure. This term will be used interchangeably with high risk, nontraditional, remedial, low ability, low achiever, marginal and educationally handicapped student.

Postsecondary Institution: Includes technical institutes and community colleges, which can also be referred to as community junior college, junior college and two-year college.

Criterion Variables: Program output by which the relative success of remedial programs will be measured. These include:

Academic Performance: The Grade Point Average (GPA) of a student for the Spring semester of 1974.

Persistence: If a student completes his/her objectives prior to the end of the Spring semester of

1974 as indicated by credit received for coursework taken, he will be regarded as having persisted for the entire semester. Or, if a student has not completed all objectives but is still pursuing them at the end of the semester and takes the posttest, he will be regarded as a persister.

Self-Concept: A measure of a student's perception of his ability to succeed in academic tasks in general as compared with other students.

Locus of Control: A measure describing the extent to which a remedial student perceives he controls his environment.

Demographic Variables: Those characteristics of remedial students that describe specified aspects of student input into the remedial program. For this study these include race, sex, age, yearly family income, and the curriculum students plan to enter after leaving the remedial program.

Program Variables: Those processes or resources provided by the remedial program which are designed to cause the desired program outputs. This study centers on the following ones:

Volunteer Instructors: Instructors whose services were contracted specifically for the remedial program

because of their desire to work with the new students found in these programs.

Focus on Self-Concept Development: A systematic attempt by remedial programs to bring about a more positive self-concept or self-image in the remedial students.

Integrated Vocational Learning Experiences: Academic coursework that is taught within the framework of the student's vocational interest, e.g., a communications course which encourages students to write on vocationally-related topics.

Individualized Instruction: Includes many components such as behavioral objectives, self-pacing, flexible timeframe, individual tutoring and student input into course objectives. Measured by an Instructional Questionnaire for this investigation.

Description of the Variables

Dependent Variables

This study used the following criterion variables to measure the relative success of remedial programs for vocational-technical students:

(1) academic performance of remedial students as measured by GPA at the end of the Spring semester of 1974,

(2) persistence as measured by whether or not a student remained in school throughout the Spring semester of 1974,

(3) the residual gain score derived from pre- and posttest scores on the selected self-concept measure,

(4) the residual gain score derived from pre- and posttest scores on the selected locus of control measure.

Grade Point Average. The standard study of academic performance (Lavin, 1965) and other articles about academic achievement use student grades as the criterion. Researchers and practicing educators do not affirm that grades are the best or only measure of performance. Indeed, the whole matter of grading is hotly disputed with protagonists displaying a variety of educational goals and values. Regardless of such differences, most parties agree to the importance of grades as one criterion of academic performance. Accordingly, this

research effort will use a student's GPA for the Spring semester of 1974 as one criterion of program success.

Persistence. Whereas a vast body of literature exists on a study of dropouts, little has been written about the use of persistence data as an indicator of success in a particular program or institution. Prediger (1965: 62) suggests:

> In light of the dropout problem in our colleges and universities, it seems appropriate that more attention be paid to persistence in college as a criterion of success. Ultimately, the student's success in college is judged not in terms of his GPA, but, rather in terms of the educational program which he has completed.

Self-Concept. Considerable evidence (Brookover, 1962, 1964, 1965; Reeder, 1965; Jersild, 1952; and Anderson, 1971) indicates the high correlation between self-concept and academic achievement. All of these studies used self-concept as a predictor variable. Olsen (1972) was apparently the first to demonstrate the positive impact of a compensatory education project--of nine months duration--on a student's self-concept.

Self-concept may be regarded as multidimensional and be measured by such instruments as Coopersmith's

Self-Esteem Inventory (Coopersmith, 1967) or the Tennessee Self-Concept Scale (Fitts, 1965). This study, however, will focus on only one aspect of self-concept--academic ability. New students typically are low achievers who have a negative perception of their ability to succeed in an academic environment.

Locus of Control. Following the cue that disadvantaged students are fatalistic and characterized by feelings of powerlessness, researchers have found that a student's locus of control is also highly related to his achievement. If a student is an I (internal), he perceives that he can manipulate the environment and thus control his payoffs. An E (external) student will believe that God, society or some uncontrollable force is the decisive factor in determining his fate. The Coleman Report (1966) played a key role in putting this concept on the intellectual map. These researchers found that locus of control was the single most important variable in predicting achievement for black and white students.

Independent Variables: Demographic

Sex. Studies consistently show that females receive higher grades than males. One study (Anderson

and Johnson, 1971) found sex the best predictor of achievement next to self-concept. Some research (Martin, 1972 and Hirst, 1969) indicates that females perform measurably better than males on achievement tests. Other studies, however, merely indicate that female students achieve higher grades. Brookover (1964) notes that females received higher grades in every subject taken in the seventh grade than males. Other studies indicate the possibility that more than ability is involved in the explanation of such differences. Borup (1969) did a study where males had higher ACT scores, but females had a considerably higher GPA in the first semester of college. Such findings have led Phelps (1973) to charge that high school grading practices discriminate against males. Regardless of the etiology of the discrepancy in grades between males and females, research indicates females do receive higher grades.

Age. Charles (1971) complains about the general lack of research about college students who are not "college age." Koos (1970) reports that seven-eighths of the full-time day students are under twenty-two. Although statistics are unavailable for evening classes, Koos places

the median age between twenty-five and thirty. Piecemeal research indicates that older students (past twenty-five) tend to achieve more than younger students. A recent study of "Students Older than Average" at The University of Texas at Austin (Whatley and Appel, 1972) reveals that older students' current GPA is higher than their earlier GPA in college. Sturtz (1971) has found that older students are also generally more satisfied with their college experience than younger students.

Ethnic Background. Comparatively few students from minority background have tasted the fruit of the educational system in the United States. The Compensatory Education Project of the Coordinating Board (1971) graphically depicted the underrepresentation of minority students in the community junior colleges of Texas vis-a-vis their percentage of the total population. Considerable documentation exists to detail the education deprivation of the disadvantaged (Coleman, 1966; Silberman, 1970; and Mosteller and Moynihan, 1972). Minority students who do emerge from secondary education with a sound academic background tend to go to college (Knoell, 1970) and achieve similar success at that next level (Hall, 1969).

Hall found that ethnicity was not as significant as socio-economic status in relationship to educational success. In his study of innovative remedial programs Kirk (1972) found that students from ethnic minorities were slightly more successful than whites in remedial programs.

Family Income. Not only does socioeconomic status have a high correlation with those who attend college (Sewell, 1967), it is significantly related to academic achievement according to the bulk of the research (Rosen, 1959; Lavin, 1965; Worthington, 1971; Baird, 1967; Hall, 1969). Munday (1972) issues a dissenting report, stating that the evidence is not sufficient to accept the hypothesis of a direct relation between social class and academic achievement. Lavin (1965), however, argues that socio-economic status is so important because it summarizes the variations in attitudes, motivations and value systems all of which are highly related to academic achievement.

Curriculum Selected. Previous studies of remedial programs have generally neglected the possibility that vocational-technical students might have different needs from students who expect to continue in a college transfer curriculum. The Snyder and Blocker study (1970)

makes the point that two-thirds of the two-year degrees eventually won by people who were formerly in developmental study programs went to college transfer students. Moreover, approximately one-third of those who completed the developmental study program and enrolled in the college transfer curriculum eventually earned a degree. Those in vocational and technical programs were not so successful. Depending on the particular program, between 15 and 23 percent completed a degree. These writers conclude that these data contradict the assumption that high risk students should aim for a terminal career degree rather than a transfer degree. That is not the only possible conclusion, however. The designs of the developmental program themselves may be inadequate for the needs of these students and thus responsible for the lack of student success. This point is particularly crucial because employers are looking increasingly to this group of students as a potential source for skilled labor. Such manpower is currently in short supply, a condition that is expected to continue apace with increasing technological developments (Brookings, 1968; Tompkins, 1970).

Independent Variables: Programmatic

Focus on Self-Concept Development. Two recent studies that make program recommendations for remedial programs in Texas stress the crucial importance of remedial programs making a systematic endeavor to develop a student's self-concept. The Compensatory Education Project (1971) suggests:

> a motivational program in which students are given a taste of success, helped to develop some self respect (emphasis mine, NLM), helped to develop realistic and attainable career objectives, helped to feel they belong at the community junior college and helped to develop skills in reading and communication.

The report of the Texas Senate Interim Committee on Public Junior Colleges (1973) endorses this recommendation. Roueche and Kirk (1973) concur. Theoretically, an improvement of student self-concept will result in higher student achievement.

Individualized Instruction. The egalitarian thrust of higher education in the United States had created an influx of students lacking traditional academic qualifications, i.e., verbal skills. Faced with the stark reality of the ineffectiveness of traditional teaching

methods, educators have developed an increasingly sophisticated educational technology in which the individualization of instruction is one key to improved instruction and therefore student learning (Cook, 1971; Roueche and Herrscher, 1973). Roueche and Kirk (1973) regard such an instructional procedure as important to the success of a remedial program because it accommodates individual differences, provides students assistance when needed, breaks down the learning activities into more manageable tasks, and allows student recycling until mastery of the course objectives is achieved--strategies designed to assure student achievement.

Research on the effectiveness of individualized instruction is lacking in the college setting, largely due to different conceptualizations of what it involves (Roueche and Dobbins, n.d.). Nevertheless, self-paced instruction, which is a crucial component of individualized instruction, does result in higher grades as compared to lecture classes (Cobb, 1970; McMichael and Corey, 1969).

Volunteer Instructors. In his earliest study of remedial programs, in which all were demonstrated as unsuccessful, Roueche (1968) found that instructors in

these programs were most often low in departmental prestige. Teaching students who were not "college material" by traditional definitions was a distasteful task. More successful programs identified in later studies (Kirk, 1972; Roueche and Kirk, 1973) found that teachers were volunteers who enjoyed teaching these students and expected them to succeed. Though no data exist to support the assertion, the assumption behind the importance of volunteer instructors is that they expect their students to succeed. Rosenthal (1968) and Bloom (1971), among others, have documented the close relation between teacher expectations and student achievement.

Integrated Vocational Learning Experiences. A literature search has uncovered no published studies on this variable. Unpublished evaluation studies indicate the potential importance of this instructional practice. One such study, reported in a letter (Angus, 1972), indicated that one hour spent in a Technical Report Writing Lab where students received help for a writing assignment made in a technical course resulted in a twelve point gain in the knowledge of English grammar while students who spent three hours a week in a Remedial Freshman Composition course gained only four points on the same test.

Each group had the same mean score initially. Weddington (1970) reports that students in a Communications Laboratory where instruction was individualized and academic content was integrated with a student's vocational interest--both according to the definitions in this present study--made higher grades than students in the more traditional classroom setting. Moreover, completion rate for the course was 80.8 percent as compared with 61.9 percent for the traditional lecture class in English grammar. Another unpublished report (Weddington, 1972) reveals a completion rate of 81 percent. An investigation of the causes of the 19 percent attrition revealed all except one student dropped out of school for reasons unrelated to this particular course. One student was advised not to continue in the course.

Summary

This chapter has set the stage for this investigation, providing background information, problem statement, purpose of the research and the questions growing therefrom. The operational definitions and a description of the variables were stated as well.

The next chapter contains a review of the literature related to the issues of this study.

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C H A P T E R I I

REVIEW OF THE LITERATURE

Introduction

This chapter contains a review of the literature which centers on four areas:

(1) studies of remedial education that deal with various aspects of this general topic;

(2) statements of educators concerning the goals and needs of remedial programs for vocational-technical students;

(3) research findings about self-concept as this construct relates to achievement, and

(4) studies that show the relationship between locus of control and achievement.

Remedial Education, General

Kirk's review of the literature (1972) had two foci: evaluation studies of remedial programs and the criticisms of the community college. After his thorough search, he drew three conclusions: (1) there is little

research concerning the effectiveness of remedial efforts at community colleges in terms of academic performance, persistence and student attitude; (2) moreover, existing studies blaringly trumpet the ineffectiveness of such programs; (3) critics of the community college focus on the reluctance of these institutions to evaluate their efforts--and thus document their claims--as well as the overzealous aim of the community colleges in attempting to serve such a broad constituency.

The situation has not changed appreciably. Only two evaluation studies have appeared since then. Sharon (1972) found that remedial students did not pass the subsequent English credit course in significantly greater numbers than the control group. The GPA of remedial students, however, was half a letter grade higher and was statistically significant. The study did not consider persistence of students in the remedial course nor in the subsequent credit course.

Bragg (1973) reports a comparison of postdevelopmental study students and regular students enrolled in English and mathematics credit courses in a community college. Five groups of postdevelopmental students had

a mean GPA above 2.00 on a four-point scale and two had scores below. Postdevelopmental students did as well as regular students in only one math and English course.

Ruchkin suggests two basic questions important for future evaluation studies of remedial programs:

> (1) What specific criteria may be used to asses a compensatory program? (2) Which program components are most successful in achieving highest criterion measures? (Ruchkin, 1972: 252)

She further proposes action-research that would (1) match students with a variety of program offerings; (2) gather demographic data on variables previously identified as significant variables in achievement and attitude studies; and (3) investigate the institutional impact on disadvantaged students.

Remedial education has received additional attention in two studies, one on a national and the other on a state level. Morrison and Ferrante (1973) completed the most extensive study of remedial education in community colleges since Kirk's work. Upon surveying the literature, they described two key components in compensatory programs. One concerns entry into the institution and includes special recruitment and financial aid. Once

in the institution varied strategies are employed to help students succeed and these include instruction in basic communication skills, teaching English as a second language, tutorial programs, flexible evaluation (e.g., repeat courses), extended school experience, summer sessions, cultural enrichment, black studies, special instructional practices, and guidance counseling services. The authors surveyed the admissions policies, curricular offerings and compensatory education offerings of a stratified random sample of two-year colleges. Perhaps their most significant finding was that "only 40 percent of the public two-year colleges in this country have the curricular offerings and admissions policies expected of public community colleges" (Morrison and Ferrante, 1972: 23). That is, while nearly all such institutions ostensibly have the open-door policy, over 40 percent of them actually require more than a high school diploma. Approximately the same number offer special programs for the academically disadvantaged.

Admittedly these authors did not seek to assess the effects of these various remedial practices. Nevertheless, they hazard three suggestions for the improvement of compensatory education in two-year colleges:

extensive recruitment in the ghettos, special training for faculty to deal with high risk students and development of more courses in ethnic studies.

A report by the Texas Senate Interim Committee on Public Junior Colleges (1973) concerning the presence of disadvantaged students in two-year institutions and the challenges they present to the schools included recommendations concerning the facilitation of success by these high risk students. The committee found that compensatory education programs were the best hope for disadvantaged students, although such programs should be more rigorously evaluated. The committee urged the schools to encourage minority students to enroll, to seek all possible financial aid for disadvantaged students, and to grant institutional as well as transfer credit for all remedial coursework. Turning to legislative action, the committee urged that remedial courses be completely funded and this by contact hour, not the twelfth day headcount. The committee also recommended that the legislature fund a variety of programs to train people to teach disadvantaged students.

Remedial Education, Vocation-Technical

Vocational educators concerned with a postsecondary setting have said relatively little about remedial education. All located statements on this topic deal with the proposed goals for such a program. Apparently no evaluation studies exist.

Brookings (1967) suggests that pretechnical programs are necessary to attract potential technical students with inadequate backgrounds for success in a technical program. The institution which offers the technical program is best suited to offer pretechnical work which would provide opportunities to strengthen science, mathematics, language and basic study skills. The author emphasizes that students entering these programs must show promise, being at least partially or moderately well prepared. Venn (1972) echoes these suggestions.

Miller and Gillie (1970) indicate that academic difficulty is the primary reason students leave postsecondary vocational and technical education. Consequently,

> of greatest importance is the offering of special, remedial coursework designed to assist the willing, financially able and well-motivated student who needs special help in foundation courses prior to entry into the regular vocational and technical program. (Miller and Gillie, 1970: 16)

They further suggest that these programs be tailored to remedy an individual's specific academic deficiencies. Moreover, such programs should provide some direct, "hands-on" involvement in his area of interest.

Tompkins (1970) reports the conclusions of an institute whose purpose was to accelerate the creation of remedial programs for prospective vocational and technical students:

1. All agreed that the highest priority was research in this area.
2. Differences exist among educators concerning who should be admitted into such programs, everyone or only those who rank in the top 20th percentile in their test scores.
3. Institute participants also disagreed about the time frame for the program. Should it last one year or should entry and exit be based totally on achievement?
4. All felt a need for tested curriculum designs.
5. Educators attending also concurred that no single source about the implementation and operation of a successful program existed.
6. Most participants were in general agreement concerning the subjects that should be taught:

communication skills, science, mathematics, reading and study skills. One writer briefly mentioned the importance of developing proper attitudes.

Miller (1972) suggests three objectives of remedial occupational education: (1) to provide instruction in basic academic skills; (2) to assist students in making a realistic self-appraisal on the basis of existing skills, interest and aptitude; (3) to develop a commitment to an "educational-vocational-personal goal."

Robertson (1973) argues that basic general education is crucial for career education among disadvantaged students. Efforts to ameliorate academic deficiencies of such students should include the use of small classes, programmed materials, paraprofessionals, self-pacing, individualized instruction and a staff with special competencies. Moreover, Robertson indicates the desirability of building curriculum materials around occupational themes, thus adding interest to the subject matter for these students. Another study concerned with career education calls for a similar rapprochement of occupational and academic subject matter (Committee for Economic Development, 1971).

Thomas (1973) has isolated self-concept, locus of control and self-actualization, and aspiration as the elements the literature regards as key to motivating disadvantaged students to achieve. Thomas reviews the literature on all four of these noncognitive variables. Self-concept is multifaceted and has no clear relation to social class, since all classes may feel good about some accomplishments whether it be physical prowess or intellectual abstraction. Significantly, however, lower class students do hold a more negative perception of themselves as students. The author notes the positive relationship between a more internally controlled student and academic achievement and notes that changing the locus of control from E toward I should be a primary objective of vocational educators. Thomas' search revealed that most students' aspirations, i.e., their anticipated achievements, leaned strongly toward the professional occupations and were independent from their parents' occupation. Career plans, however, were more related to the occupation of the parents. With regard to self-actualization Thomas emphasized the literature's insistence that it was highly dependent on a healthy self-concept.

Self-Concept

Fitts, who summarizes a vast body of literature spawned by his Tennessee Scale for Self-Concept, reports the broad finding that

> effective human performance is positively correlated with a healthy self-concept. (Fitts, 1972: 8)

With regard to achievement tests, however, researchers found few significant or clear relationships between self-concept and specific achievement scores. Many studies attempted to increase achievement by increasing a student's self-concept. On this point the evidence is clear: increased achievement and improved self-concept were highly correlated. The issue of cause and effect, however, was not clarified. That is, the research could not affirm which one caused the other.

Studies with this scale which used GPA as the criterion for academic performance generally found a higher correlation between this criterion and self-concept, probably because students perceive grades as more significant than nationally standardized tests. Other research with Fitt's scale found that students who completed specific training programs had higher self-concepts than those who did not.

Purkey, summarizing the findings of researchers using a variety of instruments measuring self-concept, made the following affirmation:

> the overwhelming body of contemporary research points consistently to the relationship between self-esteem and academic achievement and suggests strongly that self-concept can no longer be ignored by parents and teachers. (1970: v-vi)

Purkey as well as Combs (1959) points out that one's self-concept, conceived as a multidimensional construct, is relatively stable, requiring a relatively lengthy period of time before changes in self-concept result. Consequently, Purkey reports research that indicates

> more specific self-perceptions as a student are better predictors of school grades and on achievement tests than a general self-concept measure. (1970: 43)

The instrument most commonly used for this purpose is Brookover's Self-Concept of Academic Ability Scale. Brookover used this instrument to study junior high (1962, 1964) and senior high students (1967) who were over- or underachievers. In each instance he found a significant positive relationship between self-concept and GPA.

Other researchers have reported similar findings. For example, Jones and Grieneeks (1970), studying sophomores

at The University of Texas, used three measures of self-perception to predict student achievement. They found Brookover's scale to be "the most effective and consistent" predictor for their collegiate sample. Epps (1969) found that of ten variables examined, including socio-economic status, amount of expected future education, vocabulary score, perception of limited opportunities and others, a student's self-concept of his academic ability was the best predictor of a student's GPA. Moreover, one's self-concept also had the highest correlation with a person's expected education and vocabulary score.

Brookover (1964) made an intriguing finding: self-concept is significantly and positively correlated with perceived evaluations that significant others hold of the student. On this basis Brookover pondered whether or not it was possible to change a student's self-concept. Olsen (1972) found that this task could be accomplished. These students, who initially had a score of average to above average ability, registered a significant increase in self-concept after a precollege compensatory education program nine months in duration.

Locus of Control

The I-E construct is quite popular among researchers, no doubt due to its generalizability to a wide range of human behaviors. For example, studies have related it to the use of automobile seat belts (Bridge, 1971), reaction to disability (MacDonald and Hall, 1969 and others), smoking habits (James, Woodruff and Werner, 1965). The major reviews of the literature (Lefcourt, 1966; Throop, 1971; Wolk and DuCette, 1973) attest that people in this society are handicapped if they have an external locus of control orientation.

A number of studies provide strong evidence that internal locus of control is highly correlated with achievement. As indicated previously, the "Coleman Report" (Coleman et al., 1966) found that locus of control was a better predictor of achievement by minority school children than any other variable in the investigation. Studies done in the early sixties found that internally oriented students spent a greater amount of time on intellectual pursuits, displayed substantially more intensity in their academic affairs, and performed better on academic as well as intelligence tests than did externally controlled

students (Chance, 1965; Crandall, Katkovsy and Preston, 1962; Crandall, Katkovsy and Crandall, 1965). Katz (1967) found that internals earned significantly more credits than externals. More recent studies provide evidence that internality is positively correlated to scores on achievement tests as well as GPA (Brown and Strickland, 1972; Friend, 1973; Nowicki and Duke, 1973, Nowicki and Roundtree, 1971, and Nowicki and Strickland, 1973; Messer, 1972). Hjelle (1970) voices a dissent, indicating his findings provided only marginal support for this prediction. Two studies have found that black internals had higher grades, more academic interests and scored higher on achievement tests than did black externals (Gurin, Gurin, Lao and Beattie, 1969; Lao, 1970). Gozali (1973) suggests the reason why internals score better on achievement tests than externals: internals used time in a manner systematically related to item difficulty whereas externals did not.

Summary

Little literature concerning the topic of this study exists. The available literature is disparate,

reflecting a variety of concerns. Nevertheless, some themes or trends seem to be emerging among those concerned with remedial programs:

(1) Traditional noncredit, cognitively oriented remedial programs remain ineffective.

(2) Educators from both academic and occupational fields agree to the importance of self-paced, individualized instruction.

(3) Career education is providing impetus for the integration of academic and vocational learning experiences.

(4) The literature affirms significant relationship between locus of control and self-concept with achievement. Consequently, affective growth, e.g., increase in self-concept and internality in the locus of control, as well as cognitive growth is an important goal of remedial education. Only recently (cf. Thomas, 1973) have vocational educators come to this awareness.

(5) Evaluation of developmental programs is only in the beginning stages. Research must turn toward identifying those variables which account for student success.

This chapter examined the literature relevant for the purposes of this investigation. The next section will detail the research design and outline the procedures used in gathering the data for all the variables. The hypotheses for this study will be stated at the end of the chapter.

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C H A P T E R I I I

RESEARCH DESIGN AND METHODOLOGY

Design

Selection of Institutions

Sensing the potential for skilled labor from high risk students as well as the impact of the open door policy, many postsecondary institutions have created special courses and/or programs for such students. Remedial education for vocational-technical students is done in a variety of ways. No data exist to ascertain the effectiveness of such programs. Given the varied institutional responses Ruchkin suggests that

> widespread and diverse institutional practices across the nation may permit natural comparisons of effective approaches rather than requiring controlled experimental efforts. (Ruchkin, 1972: 6)

Accordingly, each of the four institutions selected for this study has a distinctive approach to remedial education for vocational-technical students, as indicated by the program descriptions (Chapter IV).

The second major reason for the selection of these schools is their location. Three are located in or near large urban areas. Special considerations led to the inclusion of this fourth nonurban school. It has the largest enrollment of any technical institute and a veritable smorgasbord of vocational and technical offerings--the greatest number in the state. Moreover, the school has historically exercised leadership in the development of remedial programs for vocational-technical students. The school sponsored a national conference on this subject in 1970 (see Tompkins, 1970).

The selection of institutions located in large cities is especially appropriate for several reasons. First is the sheer number of students attending these schools. The enrollment of the community colleges included in this study represents nearly 13 percent of all students enrolled in the two-year postsecondary institutions of Texas. The selected institutions are in districts representing almost 28 percent of the enrollment in these institutions statewide (Coordinating Board, 1973).[1] Additionally, the literature affirms that such

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[1]Originally this study included eight schools where these figures were 20 percent and 45 percent respectively. Various factors caused the elimination of

cities contain the greatest number of educationally disadvantaged who are potential benefactors of vocational-technical education--if adequate remedial programs are available through which to process these new inputs into the educational system. In the face of the massive need of large city residents, Mangum (1971) suggests the goal as no less than some formal postsecondary occupational preparation for all. He further affirms his belief that educational technology is in the last stages of experimentation necessary for the achievement of this goal.

Cooperation of the selected institutions was sought by a letter to appropriate administrative officials (see Appendix A).

Selection of Subjects

Every student entering a remedial program in the cooperating institutions for the Spring semester of 1974 and enrolling in at least nine hours of remedial work

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these institutions from this study. Two were not considered because the number of students administered posttests (2 and 3) was not enough to be considered significant in the data analysis. One program underwent an administrative change resulting in the posttests not being administered. The posttests from the other school were lost in the United States mail.

was selected as a subject. One school (referred to as Remedial Program A in the program description) accepts only vocational or technical students and offers remedial work for no credit. Nearly all students entering this program take only course work in this particular program and remain for an extended period of time. Upon successful completion of the program they may enter a regular curriculum. Those students who might have been referred to this particular program with a prescription to remedy a learning deficiency identified in regular curriculum program are not included in this study. The students at this institution, which is on the quarter system, began their coursework the first week in March. All other subjects entered their respective programs between January 10 and 18.

Data Procurement

Independent Variables

Demographic Variables. These data--sex, age, ethnic background, family income and curriculum aspiration --were gathered by means of the first section of the pretest instrument administered to all subjects upon entrance

into the remedial program. (See Appendix B, page 141). Program administrators at each school assumed the responsibility of administering the instrument. Not all students completed the first section, "student characteristics," on the pretest. In order to secure these data the investigator wrote the name of the student in the appropriate place on the instrument and circled the items to which a response was necessary. Program directors then secured the data and returned it to the investigator.[1]

Programmatic Variables. The statistical procedure used in the data analysis is more powerful with a "yes" or "no" answer to the questions regarding the existence of these programmatic variables in each remedial program. Each of the following questions seeks to ascertain the presence of a particular program variable. Each question is followed by (a) the criteria for answering each question affirmatively and (b) the method used for gathering such data.

1. Does a program focus on self-concept development?
   a. This goal had to be stated explicitly and activities, probably a course, had to be specifically designed to enhance a student's self-concept.

[1]For the descriptive statistics referring to these demographic variables, see Tables I-V at the end of this chapter.

b. Program documents, interviews with program directors and instructors, course syllabi and related materials provided this evidence.

2. Did instructors volunteer their services for this program?

   a. Program directors stated that instructors were volunteers. Selected teachers with whom the interviewer discussed remedial courses concurred with the director.

   b. Interviews with each program director and representative instructors provided these data.

3. Is instruction in this program individualized?

   a. An Instructional Questionnaire (Appendix C) was administered to each instructor in each program. The investigator administered the instrument to the instructors in Remedial Program A while program directors performed this task at other institutions.

   b. The mean score of each program had to exceed 21, a number set by the instructional experts who composed the questionnaire.

   c. Course syllabi and/or a unit of instruction served as corroborative evidence.

4. Are vocational learning experiences integrated with the academic?
   a. The English/Communications course provided evidence that learning activities were related to a student's vocational interest. Such evidence included the presence and use of occupationally related books and/or stated assignments in course syllabi.
   b. Interviews with instructors, examination of course syllabi and learning materials provided the documentation.

See Appendix D for the table showing the existence or absence of these variables in every program.

The Program Itself as a Variable. This study represents the first attempt to isolate particular program variables which account for a significant amount of the variance in the criterion variables. It was anticipated on the basis of previous research (Kirk and Roueche, 1973) that three of the four specific program variables chosen were likely to contribute a significant amount of variance. People concerned with career education noted the important of the fourth. These selected variables,

however, were not expected to account for the entire amount of variance. Other variables not specifically isolated may very well contribute a significant amount of variance unaccounted for in the variables examined by this study. Consequently, the purpose of gathering individual program descriptions was to:

(1) Provide evidence of the existence of the specific program variables this study is examining; and

(2) Identify and describe additional characteristics of each program which may account for the variance each program contributes for each criterion measure. The commonalities and differences of each program are important to note for this purpose.

This investigation followed Roueche's lead (1968: 4) by obtaining the following information about remedial programs:

1. Objectives of remedial programs.
2. Subject areas in remedial programs.
3. Organizational structure of programs.
4. Criteria used to place students in remedial programs.
5. Qualifications necessary to enter regular credit courses.

6. Grading practices and policies.
7. Methods of teacher assignment to remedial courses and programs.
8. Counseling services provided students in remedial programs.
9. Supplementary services to classroom instruction.
10. Instructional methods used in remedial programs.

Beyond these concerns information regarding any special provisions or services offered to vocational-technical students was gathered.

Program descriptions were secured from two sources: written materials and interviews. Available school catalogs, student and faculty handbooks, and course descriptions were examined. In order to secure current as well as more detailed information, the investigator interviewed program administrators, teachers and counselors.

Dependent Variables

Grade Point Average. These data were gathered at the end of the Spring semester from official school records with the cooperation of the registrar at each institution. One institution, Remedial Program A, does

not give grades for remedial courses and thus provided no data for this criterion variable.

Persistence. These data were gathered from the posttests or from official school records. Each student who completed a posttest upon completion of the course objectives or end of the semester, whichever came first, was treated as a persister. Program directors made certain each person who completed the semester or course objectives took the posttest. If official student records indicated a student received credit for coursework taken in the Spring semester of 1974, even though he did not take the posttest, he was also regarded as a persister.

Self-Concept. Brookover's Self-Concept of Academic Ability Scale (Appendix B, p.146) was used to measure a student's self-concept. The difference between the pre- and posttest scores was adjusted statistically to provide the residual gain score which served as the score for this criterion variable.

Locus of Control. Rotter's Social Attitude Survey (Appendix B, p. 143) was used to measure a student's locus of control. The difference between the pre- and

posttest scores was adjusted statistically to determine the residual gain score which served as the score for this criterion variable.[1]

Instrumentation

Self-Concept. As indicated previously, many different instruments exist to measure this construct. Most of them, however, are global in nature and are not amenable to a significant change rapidly. Consequently, one discrete component of a student's self-image, demonstrated as important to student academic achievement, was chosen for measurement viz., the perception of his own academic ability.

The selected instrument, Brookover's Self-Concept of Academic Ability Scale (1964), is a twelve item Guttman Scale. Respondents select one of five possible answers, whose values are on a continuum from five to one as follows: superior ability = 5; above average = 4; average = 3; below average = 2; and poor = 1. The points for all questions are summed in order to measure the student's perception of his academic ability. A total score of 60 indicates superior ability 48 above average; 36 average; 24 below average; and 12 poor.

[1]For the descriptive statistics referring to these demographic variables, see Tables VI-IX at the end of this chapter.

Reliability coefficients of .82, .91, .92, and .86 for males and .77, .84, .84 and .84 for females were found in four separate studies.

Locus of Control. The instrument used to measure locus of control was Rotter's Social Attitude Survey (Rotter, 1966), the one most commonly used in measuring this construct. The I-E Scale is a forced-choice questionnaire, consisting of twenty-nine items. Six of the items are "fillers" with the remaining twenty-three offering a choice between an internally or externally worded belief statement. The score is computed by adding the number of external statements selected.

Rotter (1966) reports a reliability analysis (Kuder-Richardson) which produced an r of .70 for males and females. After one month r was .60 for males and .83 for females. With regard to the instrument's validity, Rotter reports correlations with Marlowe-Crowne Social Desirability Scale (1964) ranging from -.07 to -.35. Additionally Rotter (1966) reports several factor analyses which support the assumption of this construct's unidimensionality.

Recently, however, this scale's validity has received criticism on two grounds: some items suffer from

a social desirability bias and the construct itself appears to be multidimensional rather than unidimensional.

A chorus of researchers report factor analyses which provide strong evidence of the I-E Scale's multidimensionality (Gurin, Gurin, Lao and Beattie, 1969; Levenson, 1973-173; McDonald, 1973; Mirels, 1970; and Abramowitz, 1973). Several new scales have been developed in an attempt to overcome this one's deficiencies (see Throop and McDonald, 1971). Nevertheless, recent studies using the I-E Scale have identified thirteen items that cluster meaningfully (Mirels, 1970; McDonald, 1973; Abromowitz, 1973). These investigators have identified two factors this scale adequately measures: Mastery over one's life (personal causation--items 5, 10, 11, 15, 16, 18, 23, 25, 28) and personal impact on political institutions (political causation--items 12, 17, 22, and 29). Mirels (1970) found that these items were all loaded .30 or greater for both males and females. Recent research has confirmed the validity of these items and clusters (McDonald, 1973; Abramowitz, 1973).

Moreover, despite Rotter's finding no social desirability bias, other studies have found evidence to the contrary, viz., several items, particularly those

internally stated, suffer from this defect (Gold, 1968; Cone, 1971; Joe, 1971). This bias is most strongly noticeable among middle class females attending four year colleges (Hjelle, 1971; Thurber, 1972).

Regardless of these difficulties with the I-E Scale, it remains a valid instrument for this study. There is little reason to believe the social desirability bias of this instrument would seriously affect the S's responses to the selected items. Few middle-class females were expected to enroll in these remedial programs. Moreover, research has shown the thirteen items cluster meaningfully. Since little work has been done to show the predictive value of these two subscales of the I-E Scales for various attitudinal and behavioral variables, this study will use all thirteen items. The score will consist of the sum of E items endorsed.

Hypotheses

Based upon the questions raised in Chapter I and within the framework of design and method of this study, the following hypotheses result:

For Demographic Variables.

1. The five demographic variables considered collectively are not a significant predictor of student GPA.
2. Sex is not a significant predictor of student GPA.
3. Ethnic background is not a significant predictor of student GPA.
4. Age is not a significant predictor of student GPA.
5. Yearly family income is not a significant predictor of student GPA.
6. Type of curriculum is not a significant predictor of student GPA.
7. The five demographic variables considered collectively are not a significant predictor of student persistence.
8. Sex is not a significant predictor of student persistence.
9. Ethnic background is not a significant predictor of student persistence.
10. Age is not a significant predictor of student persistence.

11. Yearly family income is not a significant predictor of student persistence.
12. Type of curriculum is not a significant predictor of student persistence.
13. The five demographic variables considered collectively are not a significant predictor of changes in student locus of control.
14. Sex is not a significant predictor of changes in student locus of control.
15. Ethnic background is not a significant predictor of changes in student locus of control.
16. Age is not a significant predictor of changes in student locus of control.
17. Yearly family income is not a significant predictor of changes in student locus of control.
18. Type of curriculum is not a significant predictor of cnanges in student locus of control.
19. The five demographic variables considered collectively are not a significant predictor of change in student self-concept.
20. Sex is not a significant predictor of changes in student self-concept.
21. Ethnic background is not a significant predictor of changes in student self-concept.

22. Age is not a significant predictor of changes in student self-concept.
23. Yearly family income is not a significant predictor of changes in student self-concept.
24. Type of curriculum is not a significant predictor of changes in student self-concept.

For Programmatic Variables.

25. The four programmatic variables considered collectively are not a significant predictor of student GPA.
26. Individualization of instruction is not a significant predictor of student GPA.
27. Program focus on self-concept development is not a significant predictor of student GPA.
28. Volunteer teachers is not a significant predictor of student GPA.
29. Integrated vocational learning experiences is not a significant predictor of student GPA.
30. Different remedial programs are not a significant predictor of student GPA.
31. The four programmatic variables considered collectively are not a significant predictor of student persistence.

32. Individualization of instruction is not a significant predictor of student persistence.
33. Program focus on self-concept development is not a significant predictor of student persistence.
34. Volunteer teachers is not a significant predictor of student persistence.
35. Integrated vocational learning experiences is not a significant predictor of student persistence.
36. Different remedial programs are not a significant predictor of student persistence.
37. The four programmatic variables considered collectively are not a significant predictor of changes in student locus of control.
38. Individualization of instruction is not a significant predictor of changes in student locus of control.
39. Program focus on self-concept development is not a significant predictor of changes in student locus of control.
40. Volunteer teachers is not a significant predictor of changes in student locus of control.

41. Integrated vocational learning experiences is not a significant predictor of changes in student locus of control.
42. Different remedial programs are not a significant predictor of changes in student locus of control.
43. The four programmatic variables considered collectively are not a significant predictor of changes in student self-concept.
44. Individualization is not a significant predictor of changes in student self-concept.
45. Program focus on self-concept development is not a significant predictor of changes in student self-concept.
46. Volunteer teachers is not a significant predictor of changes in student self-concept.
47. Integrated vocational learning experiences is not a significant predictor of changes in student self-concept.
48. Different remedial programs are not a significant predictor of changes in student self-concept.

Summary

This section outlined the design for this study, the methodology used in procuring appropriate data, as well as the hypotheses derived from the questions this investigation is seeking to answer. The next chapter provides the first data gathered--a detailed description of the four remedial programs selected for this study.

TABLE I

TYPE OF CURRICULUM

Type of Curriculum	Percent of Population
Vocational	25
Technical	32
College Parallel	14
Unknown	29

TABLE II

SEX

Sex	Percent of Population
Male	82
Female	18

TABLE III

AGE

Age	Percent of Population
18-20	24
21-23	19
24-26	19
27 and above	38

TABLE IV

ETHNIC BACKGROUND

Ethnic Background	Percent of Population
Chicano	25
Black	40
White	34
Other	--

TABLE V

YEARLY FAMILY INCOME

Income	Percent of Population
$0-2,999	21
$3,000-4,999	21
$5,000-7,499	24
$7,500 and above	35

TABLE VI

SELF-CONCEPT

Pretest	
Range	19-59
Mean	39.78
Standard Deviation	6.75
Standard Error of the Mean	.60
Posttest	
Range	20-59
Mean	41.61
Standard Deviation	6.49
Standard Error of the Mean	.68

TABLE VII

LOCUS OF CONTROL

Pretest	
Range	0-11
Mean	5.44
Standard Deviation	2.44
Standard Error of the Mean	.22
Posttest	
Range	0-9
Mean	4.99
Standard Deviation	2.33
Standard Error of the Mean	.25

TABLE VIII

PERSISTENCE

	Percent
Yes	74
No	26

TABLE IX

GPA

Range	.69-4.00
Mean	2.68
Standard Deviation	.94
Standard Error of the Mean	.12

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C H A P T E R I V

PROGRAM DESCRIPTIONS

Introduction

The purpose of this chapter is to provide detailed descriptions of the remedial programs selected for this study. A previous section of this paper (see pp. 57-9) has described the function and focus of these descriptions.

This section also contains the evidence concerning the existence of the specific programmatic variables this study has examined as outlined earlier (see pp. 55-7). An asterisk (*) at the beginning of a paragraph in the following narrative indicates the location of pertinent evidence concerning such variables. Appendix D summarizes the findings of this investigation about the existence of these variables in each program.

Remedial Program A

The chief purpose of Remedial Program A is the preparation of students for regular vocational or technical programs. This program is for students with academic

deficiencies and/or uncertain career goals. Depending upon the student's needs, this program may be terminal, leading to direct job entry.

The Technical Development Curriculum offers a wide array of subject areas. Two subjects, furniture upholstery and industrial sewing-machine operation, lead directly to job placement and require no additional coursework outside this program. Other occupationally related courses lead directly into other programs once the student has exited from the remedial program. These courses include Basic Electricity, Basic Drafting and Basic Photography. These courses permit a student to explore subjects of possible vocational interest as well as learn some foundation skills and secure basic information in these areas. All students, unless severely limited academically, e.g., reading at a second grade level, will take at least one course that is vocationally oriented.

The subject areas also include several academic courses, including Social Foundations, Preparatory Mathematics I, General Concepts of Science, Communication Skills and Reading Improvement. Additionally, science and mathematics courses are designed to help prepare a student for his chosen vocational or technical program. The reading

course focuses on improvement of a student's reading rate, comprehension and vocabulary as well as effective study methods and library familiarization. The communications course provides a review of English grammar necessary for report writing.

The Occupational Relations course, taught by a counselor, provides students the opportunity to explore their interests, abilities and personality traits as they relate to on-the-job demands such as punctuality. Proper attitudes and work habits are emphasized.

Organizationally, the Technical Development Curriculum is just another campus program, on a par with all others such as electronics or automotive mechanics. This institution attempts to follow an industrial organizational model as closely as possible, as indicated by administrative titles and formal lines of reporting. Thus the chairman of a remedial program may communicate directly with any manager (Instructional Administration, Facilities and Curriculum, and Records and Admissions) while reporting directly to the General Manager of Instruction, who supervises these three managers.

Internally, flexibility is the key descriptor. Classes are typically scheduled in one or two hour blocks,

two or three days per week. This year, however, the mathematics course is run as an open laboratory with students required to spend at least five hours per week in it. All courses may soon be organized along these lines. The time spent and courses taken while in the program vary with each individual student's needs and the objectives derived from them. A student may enter or exit the program during any school day. Approximately 100 students are enrolled in this program on the average.

To qualify for this program a person must have no high school diploma or General Education Degree (GED). Even with such certification a person may enter the program if he functions on less than an eighth grade level and thus qualifies as educationally disadvantaged. The Stanford Achievement Test (SAT) and the General Aptitude Test Battery (GATB) are used to diagnose a student's academic deficiencies. These scores, in addition to high school records and other educational experiences are evaluated by the counselors to determine entry level in the various courses.

The qualifications to enter regular credit courses vary from program to program. All technical programs leading to the Associate of Applied Science degree

require a high school diploma or its equivalent as a minimum admissions standard. More specific requirements for each program are known by the remedial staff, who provide the necessary information to the students in the articulation process. A student may enter his chosen program as soon as he demonstrates the ability to function in that program.

Since this is a noncredit program, no grades are entered on the student's transcript. A student does receive the grade of "satisfactory" (S) upon the successful completion of coursework. A student withdrawing from the program for any reason receives a WP, "withdrawal passing."

*Instructors and counselors were hired specifically for this program. Most of the staff had prior experience with educationally disadvantaged students. The staff consists of eight instructors, two full-time and two part-time evening counselors, a job developer and the program chairman.

The counselors perform a variety of tasks, including the initial interviewing, testing and scheduling. One counselor teaches the Occupational Relations course while the other is responsible for student recruitment for all regular campus programs and part-time job placement

for students enrolled in the remedial program. The job developer concentrates on placement from the upholstery and sewing courses and is developing other industrial courses. Students seek out the counselors to assist them with their social and emotional problems. A special weekly meeting with all instructors is being developed in order to exchange information concerning students with special needs.

The basic instructional method involves the use of self-paced programmed instruction. This material has implied behavioral objectives with built-in flow charts to mark student progress through the sequenced materials. Supplementary materials are used when desirable. Lecturing is uncommon. The low student-teacher ratio permits considerable personal attention. Various media are widely used primarily in the reading classes.

Several changes in instruction are currently being developed. One instructor is beginning to develop explicit behavioral objectives in photography and drafting. Reading and mathematics instructors have started the process of integrating academic learning experiences with a student's vocational choice. Few supplementary services to classroom instruction exist, since all work is done in the classroom and students usually spend thirty hours a week in

class. Field trips to various industries constitute the chief out-of-class activity.

Remedial Program B

The chief purpose of the Guided Studies program at College B is to prepare students for a regular academic, vocational or technical curriculum. Accordingly, the catalog states the qualification for entering a regular curriculum is the completion of "the recommended program of guided studies with at least a 'C' average." Then the student's choice of curriculum is eligible for approval by a departmental chairman or counselor.

Six subjects are taught in the Guided Studies program: Engligh, history, mathematics, reading, science and speech. Each department offers one course. The program is one semester in length, although a student may repeat the course if necessary. A student may receive twelve hours of elective credit from these courses toward the Associate Degree. Four-year institutions might accept these remedial courses for credit, depending on their institutional policies and requirements for specific degree programs.

Organizationally, Guided Studies is interdepartmental, with the reading instructor, who is also the Director of the Learning Resource Center, serving as the Coordinator. Students in the reading class are also enrolled in English and often other remedial courses as well. A person from each department, usually the chairperson, is responsible for the remedial offerings in that department. The coordinator, whose chief responsibility is to keep the communication lines open, will call meetings about four times a year to discuss problems and recommendations for future action. In general, each department is responsible for course content, instructional method and direction of its course. Remedial students usually enroll in at least one vocational course in addition to the academic ones.

This semester ten instructors are involved in teaching remedial courses--five in English, three in reading and one each in math and history. Though some instructors are assigned and a few might volunteer, instructional responsibility is usually rotated among the departmental staff. Exceptions to this are the reading and mathematics department. All reading courses are remedial and these instructors are secured specifically to work with high-risk students. In the mathematics department the chairperson

has a pool of instructors with some interest and skill in teaching such students, among whom he rotates this assignment.

Students enter the remedial program primarily on the basis of ACT scores. The cut-off scores for each subject are as follows: English, 12; mathematics, 7; and history, 10. Enrollment in these courses is mandatory only if a student's career objective demands such a prerequisite. Some exceptions are made, primarily when a high school transcript indicates a stronger background than the ACT indicates.

The English department has a course guide which all instructors follow. The programmed textbook used focuses on grammar and usage. Additional emphases include spelling and the construction of sentences and paragraphs. The reading course focuses on vocabulary, comprehension, speed, listening skills, dictionary usage and study skills. With classes usually consisting of no more than fifteen students, instructors are able to provide considerable individual attention. The history class is an introductory social science course covering the disciplines of history, economics and sociology. Whole numbers, fractions, decimals, proportion and some elementary higher mathematics constitute the content of the mathematics course.

Instructional methods vary widely. Lecturing is the common mode of instruction in English. A programmed textbook is used as well. The English Skills laboratory contains simplified printed matter and some hardware which is available to all students in the school. Lab assistants, who manage the instructional material, also serve as tutors. Tutoring is often done in small groups. A student can be assigned a tutor if he has a serious need. History classes have some lectures, but also make wide use of filmstrips, records, films and discussion groups. Occasional field trips are taken. Students may also attend various lectures the history department sponsors. Various media are also used in the reading class. Different levels of materials are used for each student, depending on his need. In mathematics, computer-prepared pretests are administered for diagnostic purposes. While all students cover the same basic content, one may omit practice sessions if he is comfortable with the material. If a student does poorly on the computer-prepared posttest, he has the opportunity to retake a similar quiz after a period of additional review. A student who is extremely slow and does not respond to the standard format, i.e., explanation, drill and quiz, may use the computer assisted instruction system.

This program follows the institutional four-point grading system. Credit is received for the grades A-D, with F a failing grade. A student receives a WP for withdrawing while passing and a WF if he is failing. An I signifies an incomplete which must be completed within the subsequent semester or it becomes an F automatically. In order to remain in good academic standing a student must accumulate a certain number of credits and grade points per number of credits attempted, as indicated by a sliding scale in the catalog. For example, a student taking twelve semester hours must pass a minimum of seven and accumulate a minimum of seventeen grade points.

No special counseling services are available to these high-risk students that are not available to the remainder of the college population. Counselors have the responsibility of student placement. Counseling offices are located in five satellite centers in various areas of the campus. Some remedial students have some additional counseling and tutoring services available in Special Services, a government funded project for economically disadvantaged students. Participation in this project is voluntary and not limited to students who are required to take remedial courses. Counselors are routinely in contact

with all students in the institution who received a D or F at mid-semester, concentrating on students with more than one.

Remedial Program C

The rationale behind the development of the Pre-technical Program at School D is particularly informative. This institution has had a developmental program for several years. However, its primary purpose was to provide the first year of academic work toward the Associate of Arts degree. The faculty and staff perceived that most students were oriented more toward vocational or technical subjects rather than college transfer. Consequently, a major objective of the program became the redirection of these students toward a vocational or technical curriculum. As a result of changing his occupational direction, a student lost half of his credits because the Associate of Applied Science degree did not require a year of general education. Thus the Department of Applied Studies was created to meet the needs of these students.

In spite of the diversity described later, the programs in the Department of Applied Studies which are included in this study share several objectives as follows:

1. To assist a student in developing fundamental skills basic to success in a business, technical or vocational program.

2. To aid the student in developing a better understanding of his abilities and limitations.

3. To aid the student in making a realistic vocational decision on completion of the program.

4. To assist the student in developing skills in interpersonal relations and a more positive self-concept.

The inability to control the environment because of the courses taken outside the department hampers the effort to develop self-concept according to the staff. The staff attempts to keep a student in school at least until he has found himself vocationally. Direct job placement of students in the program is sometimes done.

Applied Studies is in a department within the Division of General Studies, one of six devisions in the college. The chairman of the Applied Studies Department reports directly to the chairman of the Division. Other departments in the Division include the two Basic Study teams, Reading and Human Development. The department itself contains four distinct components, three of which are included in this study: the Pretechnical (or prevocational)

program, the Prebusiness program and the Veterans' program. A core curriculum of three courses, Applied Communications, College Reading and Human Relations, constitutes their basic commonality. In addition, Pretechnical students take Applied Physics and Math and a Special Problems course which provides a survey of various occupations. Prebusiness students enroll in two business electives while those in the Veterans' take Contemporary Social Problems as no pretechnical or prebusiness electives are offered at night.

These programs, whose courses all apply toward the A.A.S. degree, are designed to last one semester, although a few additional courses are available the second semester. Classes are held in fifty-minute blocks. The Pretechnical and Prebusiness programs operate during the day and the Veterans' at night.

*The Human Relations Course is theoretical as well as practical. Several theories of behavior are described, e.g., Freud, Skinner, Glasser, etc. The Transactional Analysis model is used to assist students in understanding themselves as well as interpersonal relationships. Most didactic material is presented in the context of group work. Different types of group activities such as role-playing, gaming, counseling, etc. are designed to facilitate

a student's problem-solving abilities and to assist him in planning his career. Career planning also involves an analysis of the job market and practice in filling out applications and developing a resumé. All of these activities are designed to make a student more aware of his environmental controls and create more confidence in himself as a competent human being.

*Basic Communications focuses on writing. Initially, considerable time is spent in breaking down student resistance resulting from previous experiences in English courses. Instructors reinforce observable student achievement in order to assist the student in developing a more positive personal image. Composition is taught inductively. Students begin by analyzing the structure of compositions, then paragraphs and finally sentences. Points concerning grammatical refinements such as capitalization and punctuation are made in the process of writing the composition. Instructors assist students' vocabulary building in their own occupational field and encourage them to write on topics relating to their future occupation. Several writing assignments specifically reflect various aspects of the workaday world.

In order to accommodate the wide variety of student interest and reading ability, the College Reading

course offers a wide variety of published and instructor-made materials. High interest reading materials on all levels are available. Individual diagnosis and learning assignments are made. Pretesting and periodic testing document student progress in comprehension and rate. Team teaching is utilized as are various media.

No screening of veterans entering the program is done. They enter if they see the program as having value for them. Students are advised concerning the availability of the Pretechnical and Prebusiness programs if their composite scores are under thirteen on the ACT. They may enroll if interested.

*Volunteer instructors teach all courses. The instructional staff consists of six full-time people, seven who have major responsibilities in Basic Studies and two part-time night instructors.

Instructors who teach the Human Relations course also double as counselors. In addition, students also have access to other counselors on campus. Counselors routinely administer the General Aptitude Test, the Tennessee Scale of Self-Concept, the Kuder Interest Profile and the Beta (nonverbal) intelligence test. On the basis of these tests counselors identify students who will need the

most affective support in order to succeed in the program. Social activities for student and instructors help foster a supportive environment. The tutoring service available to all college students is open to developmental students through a referral system.

This institution has a four point grading system, with grade A-D passing and F and WF failing. A student may receive an approved withdrawal W up to two weeks from the final examination. An I (incomplete) may be given with the consent of the instructor and the Dean of Instruction. Unless the student completes course objectives within thirty days, the I changes to an F.

Remedial Program D

This program is designed for students whose academic background is not as deficient as those who are assigned to the regular school remedial program, but who are still unable to compete in regular technical programs that require a strong mathematical background. The two programs that most commonly enroll students in this remedial program are Engineering Technology and Architectural Drafting. Thus the basic purpose of the pretechnical program is to provide the prerequisite knowledge and skills for the student's successful completion of these two technical programs.

Three subject areas exist: English, mathematics and electrical engineering technology. All of these courses are four credit hours, with three hours of lecture and three of laboratory. The school's regular remedial program has no laboratory work. The mathematics course begins with a review of fractions and goes through algebra in preparation for the regular college algebra course. Laboratory time is typically spent in working problems on the board in order to diagnose individual problems.

The electrical engineering course basically involves an introduction to electricity. It requires little abstraction, emphasizing the memorization of terminology, symbols and resistor color codes. The laboratory involves learning to recognize the basis electronic hardware and elementary wiring. From the outset of the class a student is aware that he will pass the course, probably with a high grade, if he completes his performance objectives and exhibits dependability, the initiative and the ability to follow orders. Both of these two courses are taught by instructors from the college's technical division.

The English course is taught by instructors from the academic curriculum. The bulk of the course is devoted to composition with a student expected to write a 500 word

theme at the end of the semester. Reading and spelling are also emphasized. The lecture period is usually half lecture and half class participation. Many audiovisuals such as films and transparencies are frequently used. The laboratory time includes a brief period devoted to spelling with one hour devoted to reading. Usually one hour of the lab is devoted to lectures on reading and notetaking. During the reading laboratory the instructor has individual conferences with students concerning their progress.

The electronics and mathematics courses are under the supervision of the Assistant Dean for Technical Education while the English course is offered under the auspices of the school's English deparment. Aside from the electrical engineering course which is taught by an instructor with a special interest, the pretechnical courses are usually assigned to people in terms of their availability. Teachers with lighter workloads are usually selected. All three courses are one semester in length, and institutional credit is granted for each. The English and mathematics instructors give tests before the twelfth class day in order to determine if students are misplaced. If they are, they may withdraw and enroll in the correct class.

A student is admitted into the pretechnical program on the basis of his ACT scores (or similar tests,

the SAT or CGP), high school transcript and vocational interest. The ACT cut-off score for the English and mathematics section is typically 15. Most weight, however, is attached to the high school transcript. Entrance into the pretechnical program is not absolutely mandatory, since a student can pursue the original recommendation by the counselor all the way to the president. Rarely do appeals reach this level, however.

Additional information is necessary to understand the rationale behind a recommendation to take the pretechnical courses. The school catalog requires that a student have two years of high school algebra before graduation unless he proves his ability to function in a program without this amount of algebra. Only in the Engineering Technology and Architectural Drafting programs is it necessary for students to have this amount of algebra. Typically these students also need the electrical engineering course. Both of these courses are prerequisite to the beginning mathematics course in these two programs. Theoretically a person could enter a regular technical curriculum before taking the pretechnical courses, since the latter are merely added on to the list of requirements for that particular curriculum. This occasionally occurs in the English course

since it is only a requirement for graduation, not a prerequisite for a particular course.

Grading practices follow institutional policy of a four point grading system with grades of "A"-"F". An "I" is given by the instructor when work is incomplete for an acceptable reason. An "I" changes to an "F" after twelve months. A student receives a "W" if he withdrew from class within the first six weeks of a semester or while passing within the drop period. If a student is failing a course from which he withdraws after the first six weeks, he will receive a "WF". A student is placed on probation unless he receives a grade of "C" or better on three-fourths of the work attempted.

Pretechnical students have the same counseling services available to them as do other college students. All counselors serve as vocational and academic advisors as well as personal counselors.

Summary

This chapter contained a description of the remedial programs chosen for this study. The next chapter discusses the statistical procedure used in this study and provides the results of the data analysis for each hypothesis.

C H A P T E R V

DATA ANALYSIS

Statistical Procedures

Since this study's basic goal is to identify those variables, demographic and programmatic, which are the best predictors for student success, the statistical procedure selected had to be appropriate for this purpose. Veldman states that multiple regression analysis

> may be considered a general model for testing any hypothesis cast in the form of predicting a criterion from particular sources of information. (1967: 294)

Consequently, multiple linear regression analysis was utilized in analyzing the data collected for this study. This method of analysis is particularly advantageous because it permits testing the predictive efficiency of various linear models while holding some variables, i.e., covariables, constant. For each hypothesis in this study a number of predictor variables were considered stimultaneously in relation to a criterion while other predictors were held constant.

The utility of a multiple regression approach in determining the predictive efficiency of sets of variables has been amply demonstrated (Kelly et al., 1969; Overall and Klett, 1972). The analytic procedure employed in multiple regression is to determine a set of weights for the predictor variables which will yield a composite score that maximally correlates with the criterion variable (Veldman, 1967). Analysis of the present data was performed by Program REGRAN (Veldman, 1967).

The following equation expresses the basic multiple linear regression model used to accept or reject the hypotheses of this study:

$$Y = a_0U + a_1X_1 + a_2X_2 + \ldots a_{13}X_{13} + E$$

where

Y = the criterion variable, i.e, GPA, persistence, changes in locus of control and changes in self-concept, and

a_0, a_1, ... a_{13} the least square weights of the following vectors.

U = Unit vector

X^1 = Sex

X_2 = Ethnic Background

X_3 = Age

X_4 = Yearly Family Income

X_5 = Type of Curriculum

X_6 = Individualized Instruction

X_7 = Program Focus on Self-Concept Development

X_8 = Integrated Vocational Learning Experiences

X_9 = Volunteer Teachers

X_{10} = Remedial Program A

X_{11} = Remedial Program B

X_{12} = Remedial Program C

X_{13} = Remedial Program D

Full models which included all predictor variables were developed for each of the four criterion variables used in this investigation. When predictors were removed one at a time from the full model, restricted models were obtained for comparison with the full model.

Restricted models were created in order to provide information for each of the thirteen predictors. By eliminating a predictor variable from the full model, the predicted values computed would not include any variance attributable to the particular predictor being examined. Moreover, since one of the concerns of this

research was to ascertain the collective power of program variables vis-a-vis demographic variables, restricted models were prepared that included all programmatic variables and all demographic variables respectively.

In analyzing the hypotheses concerned with individual remedial programs two different restricted models were used in successive analyses. One restricted model treated the individual remedial programs collectively as one predictor. The next analysis broke out each remedial program and treated each as a separate predictor. This strategy made it possible to ascertain if remedial programs contributed a significant amount of variance, and if so, which one(s) made a significant contribution.

As a function of the small number of remedial programs examined in this investigation, the programmatic variables had to be excluded from the analysis of individual remedial programs since many of the predictors would be linearly dependent. For example, if one program element was unique to one remedial program, the vectors for the programmatic variable and the remedial program would be identical and one would be completely predictive, i.e., linearly dependent of the other. Consequently, the

variance contributed to the criterion variables by individual remedial programs included that variance contributed by the programmatic variables as well as additional variance of the particular program under consideration.

A further difficulty was encountered in analyzing each program. In a multiple regression equation using classification membership ("dummy" variables) the classification memberships must be independent. In this analysis with four schools in which a student might be classified, only three degrees of freedom exist. Thus, if all the subjects classified in three remedial programs are known, then the subjects classified in the fourth are automatically known. The subjects in the fourth classification cannot be treated in the analysis, then, because the test of independence is not met. Consequently, it was not possible to make all comparisons using multiple regression analysis. Comparisons were made according to which programs it was felt would indicate the largest effect.

Bottenberg and Ward state the usefulness of the restricted model in allowing the researcher

> to examine the contribution of one vector to the efficiency of the prediction system is to ascertain if this vector contributes information not available in the other vectors used in the system of predictors. (1963: 52)

F-Tests

Comparing the multiple linear regression full models with the restricted models for each predictor variable made possible the determination of the effect of the predictors in the full model by means of an F-test. Following is the formula for an F-test:

$$F = \frac{(M_A^2 - M_B^2)/(K_A - K_B)}{(1 - M_A^2)/(N - K_A)}$$

Where:

M_A^2 is the squared multiple correlation for the full model;

M_B^2 is the squared multiple correlation for the restricted model;

K_A is the number of linearly dependent predictors in the full model;

K_B is the number of linearly dependent predictors in the restricted model;

N is the number of subjects in the sample. (Veldman, 1967)

The F-ratios and the probability values generated by computing the F-test served as the basis for rejecting or failing to reject the null hypotheses of this study. The analytical procedure assumes that the

deletion of a predictor which causes a significant reduction of the full model R^2 indicates that the predictor contributed significantly to the prediction of the criterion. A significant F-ratio indicates that statistical differences are most likely not due to chance. The level of probability (or alpha) indicates the degree of confidence with which the null hypotheses may be falsely rejected. For the purpose of this study a probability level of .05 was arbitrarily selected as the level of significance for testing the hypotheses.

Hypotheses and Data Analysis

The following section provides a statement of the hypotheses followed by the statement of acceptance or rejection based on the p value. The more common word "accepted" will be used in this discussion as the opposite of "rejected" instead of the technically correct phrase "failed to be rejected." For rejection p must be $< .05$; for acceptance, $> .05$. Tables X-XIII at the end of this chapter summarize the results of the data analysis for each of the four criterion variables, giving the difference in R^2 between full and restricted models, F value and probability value for each predictor variable.

Demographic Variables

1. The five demographic variables together are not a significant predictor of student GPA. This null hypothesis was rejected at $p < .01$.
2. Sex is not a significant predictor of student GPA. This null hypothesis was accepted with $p > .05$.
3. Ethnic background is not a significant predictor of student GPA. This null hypothesis was accepted with $p > .05$.
4. Age is not a significant predictor of student GPA. This null hypothesis was rejected at $p < .01$.
5. Yearly family income is not a significant predictor of student GPA. This null hypotheses was rejected at $p < .01$.
6. Type of curriculum is not a significant predictor of student GPA. This null hypothesis was accepted at $p > .05$.
7. The five demographic variables together are not a significant predictor of student persistence. This null hypothesis was accepted with $p > .05$.

8. Sex is not a significant predictor of student persistence. This null hypothesis was accepted with $p > .05$.

9. Ethnic background is not a significant predictor of student persistence. This null hypothesis was accepted with $p > .05$.

10. Type of curriculum is not a significant predictor of student persistence. This null hypothesis was accepted with $p > .05$.

11. Age is not a significant predictor of student persistence. This null hypothesis was accepted with $p > .05$.

12. Yearly family income is not a significant predictor of student persistence. This null hypothesis was also accepted at $p > .05$.

13. The five demographic variables together are not a significant predictor of changes in student locus of control. This null hypothesis was accepted at $p > .05$.

14. Sex is not a significant predictor of changes in student locus of control. This null hypothesis was accepted at $p > .05$.

15. Ethnic background is not a significant predictor of changes in student locus of control. This null hypothesis was accepted with $p > .05$.

16. Age is not a significant predictor of changes in student locus of control. This null hypothesis was rejected at $p < .01$.

17. Yearly family income is not a significant predictor of changes in student locus of control. This null hypothesis was accepted at $p > .05$.

18. Type of curriculum is not a significant predictor of changes in student locus of control. This null hypothesis was accepted with $p > .05$.

19. The five demographic variables together are not a significant predictor of changes in student self-concept. This null hypothesis was accepted at $p > .05$.

20. Sex is not a significant predictor of changes in student self-concept. This null hypothesis was accepted at $p > .05$.

21. Ethnic background is a significant predictor of changes in student self-concept. This null hypothesis was accepted with $p > .05$.

22. Age is not a significant predictor of changes in student self-concept. This null hypothesis was accepted with $p > .05$.

23. Yearly family income is not a significant predictor of changes in student self-concept. This hypothesis was accepted with $p > .05$.

24. Type of curriculum is not a significant predictor of changes in student self-concept. This null hypothesis was accepted with $p > .05$.

Programmatic Variables

25. The four programmatic variables together are not a significant predictor of student GPA. This null hypothesis was rejected at $p < .01$.

26. Individualization of instruction is not a significant predictor of student GPA. This null hypothesis was accepted with $p > .05$.

27. Program focus on self-concept development is not a significant predictor of student GPA. This null hypothesis was accepted with $p > .05$.

28. Volunteer teachers are not a significant predictor of student GPA. This null hypothesis was accepted with $p > .05$.

29. Integrated vocational learning experiences are not a significant predictor of student GPA. This null hypothesis was also accepted with $p > .05$.

30. Different remedial programs are not a significant predictor of student GPA. This null hypothesis was rejected at $p < .01$ for all programs combined. Individually

    Program B was not a significant predictor ($p > .05$);

    Program D was a significant predictor ($p < .01$).

31. The four programmatic variables together are not a significant predictor of student persistence. This null hypothesis was rejected at $p > .05$.

32. Individualization of instruction is not a significant predictor of student persistence. This null hypothesis was accepted with $p > .05$.

33. Program focus on self-concept development is not a significant predictor of student persistence. This null hypothesis was accepted with $p > .05$.

34. Volunteer teachers are not a significant pre- of student persistence. This null hypothesis was accepted with $p > .05$.

35. Integrated vocational learning experiences are not a significant predictor of student persistence. This null hypothesis was accepted with $p > .05$.

36. Different remedial programs are not a significant predictor of student persistence. This null hypothesis was accepted for all programs combined at $p > .05$. Individually, however, one program was a significant predictor:

    Program C ($p < .01$)

    Program B ($p > .05$)

    Program D ($p. > .05$)

37. The four programmatic variables together are not a significant predictor of changes in student locus of control. This null hypothesis was rejected at $p < .01$.

38. Individualization of instruction is not a significant predictor of changes in student locus of control. This null hypothesis failed to be rejected at $p > .05$.

39. Program focus on self-concept development is not a significant predictor of changes in student locus of control. This null hypothesis was accepted at $p > .05$.

40. Volunteer teachers are not a significant predictor of changes in student locus of control. This null hypothesis was accepted at $p > .05$.

41. Integrated vocational learning experiences are not a significant predictor of changes in student

locus of control. This null hypothesis was accepted with $p > .05$.

42. Different remedial programs are not a significant predictor of changes in student locus of control. This null hypothesis was rejected for all programs considered together at $p < .01$. One individual program was a significant predictor:

    Program B ($p < .01$)

    Program C ($p > .05$)

    Program A ($p > .05$)

43. The four programmatic variables together are not a significant predictor of changes in student self-concept. This null hypothesis was accepted with $p > .05$.

44. Individualization of instruction is not a significant predictor of changes in student self-concept. This null hypothesis was accepted with $p > .05$.

45. Program focus on self-concept development is not a significant predictor of changes in student self-concept. This null hypothesis was accepted at $p > .05$.

46. Volunteer teachers are not a significant predictor of changes in student self-concept. This null hypothesis was accepted with $p > .05$.

47. Integrated vocational learning experiences are not a significant predictor of changes in student self-concept. This null hypothesis was also accepted with $p > .05$.

48. Different remedial programs are not a significant predictor of changes in student self-concept. This null hypothesis was accepted for all programs combined ($p > .05$) as well as all individual programs:

    Program A ($p > .05$)

    Program B ($p > .05$)

    Program C ($p > .05$)

Summary

This chapter described the basic statistical procedure used in analyzing the data gathered for this investigation and the results of the data analysis for each hypothesis. The final chapter will provide a summary of this investigation, state the findings in relationship to the research questions raised initially and suggest recommendations for additional research and administrative action.

TABLE X

RELATIONSHIP OF PREDICTORS TO THE CRITERION: GPA

Predictor	R^2 Difference	F	df	Probability Value
All Five Demographic Combined	.22	5.51	5/52	< .01
Sex	.00	.00	1/52	> .05
Ethnic Background	.00	.31	1/52	> .05
Age	.09	11.73	1/52	< .01
Yearly Family Income	.10	12.05	1/52	< .01
Type of Curriculum	.01	.66	1/52	> .05
Programmatic				
Four Programmatic Variables Combined	.14*	3.47	4/52	< .01
Individualized Instruction	.00	.00	1/52	> .05
Program Focus on Self-Concept Development	.00	.00	1/52	> .05
Volunteer Teachers	.00	.00	1/52	> .05
Integrated Vocational Learning Experiences	.00	.00	1/52	> .05
All Remedial Programs Combined	.14	9.17	2/55	< .01
Remedial Program A		no grades given		
Remedial Program B	.02	2.65	1/55	> .05
Remedial Program C	--	--	--	--
Remedial Program D	.14	18.32	1/55	< .01

*This amount of variance is possible for all four programmatic variables combined when none exists for individual variables simply because of their high correlation.

TABLE XI

RELATIONSHIP OF PREDICTORS TO THE CRITERION: PERSISTENCE

Predictor	R^2 Difference	F	df	Probability Value
All Five Demographic Combined	.03	.93	5/118	> .05
Sex	.00	.23	1/118	> .05
Ethnic Background	.00	.05	1/118	> .05
Age	.00	.63	1/118	> .05
Yearly Family Income	.02	2.29	1/118	> .05
Type of Curriculum	.01	1.31	1/118	> .05
Programmatic				
Four Programmatic Variables Combined	.05	1.54	4/118	> .05
Individualized Instruction	.00	.00	1/118	> .05
Program Focus on Self-Development	.00	.00	1/118	> .05
Volunteer Teachers	.00	.00	1/118	> .05
Integrated Vocational Learning Experiences	.00	.00	1/118	> .05
All Remedial Programs Combined	.05	2.10	3/119	> .05
Remedial Program A	--	--	--	--
Remedial Program B	.02	2.76	1/119	> .05
Remedial Program C	.04	6.18	1/119	< .01
Remedial Program D	.01	1.06	1/119	> .05

TABLE XII

RELATIONSHIP OF PREDICTORS TO THE CRITERION: LOCUS OF CONTROL

Predictor	R^2 Difference	F	df	Probability Value
All Five Demographic Combined	.07	1.49	5/80	> .05
Sex	.00	.06	1/80	> .05
Ethnic Background	.01	.58	1/80	> .05
Age	.06	6.17	1/80	< .05
Yearly Family Income	.00	.43	1/80	> .05
Type of Curriculum	.01	1.01	1/80	.32
Programmatic				
Four Programmatic Variables Combined	.11*	2.9	4/80	< .05
Individualized Instruction	.00	.00	1/80	> .05
Program Focus on Self-Concept Development	.00	.00	1/80	> .05
Volunteer Teachers	.00	.00	1/80	> .05
Integrated Vocational Learning Experiences	.00	.00	1/80	> .05
All Remedial Programs Combined	.18	7.24	3/81	< .01
Remedial Program A	.01	.17	1/81	> .05
Remedial Program B	.10	12.64	1/81	< .01
Remedial Program C	.05	.58	1/81	> .05
Remedial Program D	--	--	--	--

*The high correlation of individual programmatic variables results in no variance contributed by individual variables, but a significant amount by all of them together.

TABLE XIII

RELATIONSHIP OF PREDICTORS TO THE CRITERION: SELF-CONCEPT

Predictor	R^2 Difference	F	df	Probability Value
All Five Demographic Combined	.04	.73	5/80	> .05
Sex	.02	1.39	1/80	> .05
Ethnic Background	.00	.41	1/80	> .05
Age	.01	.79	1/80	> .05
Yearly Family Income	.00	.01	1/80	> .05
Type of Curriculum	.00	.37	1/80	> .05
Programmatic				
Four Programmatic Variables Combined	.01	.24	4/80	> .05
Individualized Instruction	.00	.00	1/80	> .05
Program Focus on Self-Concept Development	.00	.00	1/80	> .05
Volunteer Teachers	.00	.00	1/80	> .05
Integrated Vocational Learning Experiences	.00	.00	1/80	> .05
All Remedial Programs Combined	.01	.42	3/81	> .05
Remedial Program A	.00	.07	1/81	> .05
Remedial Program B	.00	.07	1/81	> .05
Remedial Program C	.00	.29	1/81	> .05
Remedial Program D	--	--	--	--

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C H A P T E R V I

SUMMARY, FINDINGS AND RECOMMENDATIONS

Summary

The basic need this investigation addresses is the lack of an evaluation study for remedial programs in which postsecondary vocational-technical students are enrolled. Administrators have very little data to use in making decisions concerning program elements necessary to facilitate student success in remedial programs. This investigation sought to identify those demographic and programmatic variables which were the best predictors of student success in a program as measured by four criterion variables: GPA, persistence, increase in the internality of student locus of control and increase in student self-concept. The demographic variables examined were age, sex, yearly family income, type of curriculum aspiration and ethnic background. The programmatic variables isolated were individualized instruction, integrated vocational learning experiences, program focus on self-concept development and volunteer instructors. In order

to capture the programmatic variance unaccounted for by these selected variables, the program itself was regarded as a variable.

The basic concern behind this design was the question of whether or not the educational processes (program variables) of remedial programs were sufficiently powerful to alter the anticipated output (criterion variables), which could typically be predicted from the characteristics of the student input (demographic variables).

The criterion measures used to indicate student --and therefore program--success included standard ones such as GPA and persistence. Two self-perception measures, self-concept and locus of control, were also selected as criterion variables because of their high correlation with achievement.

A desirable goal of remedial programs would be to cause a positive shift in these psychological constructs of remedial students in order to enhance the likelihood of their future achievement.

Chapter I provided background information concerning this study, elaborated the problem statement, indicated the purposes and research questions of this investigation, provided its operational definitions as well

as described the variables under consideration. The literature review of Chapter II encompassed a variety of literature, including studies about remedial programs which have appeared since Kirk's dissertation of 1972, statements of vocational educators about the goals of remedial education for vocational-technical students and research studies about the relationship of self-concept and locus of control to achievement. Chapter III detailed the research design and methodology for this study. Remedial programs, located in urban settings, which exhibited significant programmatic differences were selected for this investigation. All students entering these programs in the Spring semester of 1974 were selected as subjects. This chapter also contains the hypotheses of this study. Chapter IV contains the description of each individual remedial program. This section documented the existence of programmatic variables in the various programs as well as additional program characteristics. Chapter V contains the description of the statistical procedure used to analyze the data, as well as the analysis of the data collected for this investigation.

Limitations of This Study

The nature of this sample limits the generalizability of this investigation. This study included all 128 students who entered selected remedial programs in four urban postsecondary institutions in the Spring of 1974. The schools, however, were not randomly selected.

Findings

This investigation sought to determine the answers for the questions posed in the first chapter. Following is the list of these questions, with the presentation of the findings of the appropriate data analyses and further discussion where relevant. In two instances, questions three and nine, additional data analysis was performed in order to clarify some of the findings provided by the multiple linear regression analysis.

1. To what extent do specified demographic variables affect GPA?

Considered as a whole, the five demographic variables (Hypothesis 1) were a significant predictor ($p < .01$). The amount of variance contributed is .22. Further analysis indicated that two of the variables age

(Hypothesis 4) and yearly family income (Hypothesis 5), were significant predictors at $p < .01$ for each. Age contributed .09 of the variance and yearly family income .10. Importantly, sex (Hypothesis 2) was not a significant factor, perhaps a function of the small number of female subjects ($N = 23$) or of some unidentified variable(s) in the programs.

2. To what extent do specified programmatic variables affect GPA?

The four programmatic variables (Hypothesis 25) considered collectively are a significant predictor of student GPA ($p < .01$); the amount of variance contributed was .14. As a function of the small number of remedial programs examined in this study, individual programmatic variables were highly correlated, as indicated by the findings that no specific variable contributed a significant amount of variance.

3. To what extent do different remedial programs affect GPA?

Different remedial programs (Hypothesis 30) are a significant predictor of student GPA. All four schools considered together as one predictor results in $p < .01$ and variance contributed as .14. Individually,

only remedial Program D was a significant predictor at $p < .01$ and variance contributed .14. The grades in Program D were quite low. (The mean GPA's for the remedial programs follow: B = 2.31; C = 3.22; D = 1.67; the mean GPA for Programs B and D combined was 2.17.) Students in remedial Program C had significantly higher grades when compared to those from Programs B and D combined ($p < .01$).[1] Programs B and D were combined for two reasons: (1) each had none of the programmatic variables examined by this study and (2) School D had such a small N--7.

Although demographic variables did contribute more variance (.22) than did the programmatic variables (.14), it appears significant that the programmatic variables made such a significant contribution. Traditionally, demographic variables are very highly correlated with GPA (Lavin, 1965).

4. To what extent do specific demographic variables affect persistence?

Strikingly, demographic variables taken collectively or individually did not contribute significant

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[1]This data resulted from an analysis of variance, which compared the means of the two groups. Computation was performed by Program ANOVAR (Veldman, 1967).

amount of variance. Only yearly family income ($p = .13$) even approached significance.

5. To what extent do specified program variables affect persistence?

Program variables collectively nor individually contribute a significant amount of variance in persistence.

6. To what extent do different remedial programs affect persistence?

Collectively, the amount of variance contributed by remedial programs (Hypothesis 36) only approaches significance ($p = .10$). The only significant predictor of persistence was remedial Program C ($p < .01$; the variance contributed was .04. Importantly, this program includes three of four programmatic variables under consideration in this study. Clearly, however, while programmatic variables are significant predictors of GPA and changes toward internality in locus of control, they are not as significant in predicting persistence. Program C has additional variables operating to produce this significant result, which not only differ from the programmatic variables, but also probably from other program as well. The program description indicate three variables which may be significant:

(1) Many opportunities for social interaction

(2) Coursework which not only counts toward a degree offered by the institution, but is also transferable to other schools; and

(3) A tightly knit, supportive environment.

These variables quite likely help make this program a place students want to be.

This finding seems particularly impressive since a student's socioeconomic background is far and away the most powerful predictor of persistence (Knoell, 1966; Burkhead, 1967).

7. To what extent do specified demographic variables affect changes in locus of control?

Combined, the five demographic variables do not predict changes in locus of control. Age (Hypothesis 16), however, is a significant predictor ($p < .05$); variance contributed is .06.

8. To what extent do specified programmatic variables affect changes in locus of control?

The four programmatic variables considered collectively (Hypothesis 37) are a significant predictor of the shift toward an increase in internality in student locus of control ($p < .01$); variance contributed is .11.

Once more, individual programmatic variables are not significant predictors.

9. To what extent do different remedial programs affect changes in locus of control?

Considered together (Hypothesis 42), the four programs result in a $p < .01$; variance contributed is .18. Individually, only one remedial program contributed a significant amount of variance: Program B ($p < .01$); variance contributed is .10. The direction of this change, however, was toward externality. A t-test of the single mean versus the null hypothesis (Hays, 1963), indicated that students in this program moved significantly in the external direction ($p < .01$). The same analysis of changes in student locus of control at each school revealed the following:

Program A students showed a significant move toward internality ($p < .05$).

Program C students experienced a significant shift toward internality ($p < .05$).

Program D students, with an N of only seven, experienced no significant shifts in either direction.

Since Programs A and C, respectively, contain two and three of the program variables examined by this

investigation, the direction of this shift is not surprising. The small N of Program D made a significant result unlikely.

These results are particularly impressive since variables controlled by the programs are so influential. Aside from age, demographic variables plainly do not exert a powerful influence. If locus of control is indeed the powerful construct the literature signifies, remedial programs successful in producing external to internal shifts may expect to have long-term impact on its students.

10. To what extent do demographic variables affect changes in self-concept?

Treated collectively or individually, no significant demographic predictor was identified.

11. To what extent do specified program variables affect changes in self-concept?

Neither were any programmatic variables predictive of changes in self-concept.

12. To what extent do different remedial programs affect changes in self-concept.

Once more, no significant predictor was found. Thus, no variable contributed a significant amount of

variance in changes in student self-concept. However, in the study indicated earlier (Olsen, 1972), where students did show a significant gain in self-concept over a nine months period, the author suggests that a change in roles at the end of the compensatory education program from remedial student to regular college student might have caused the shift. Moreover, the time frame involved in Olsen's study was more than twice as long as the one in this investigation.

Recommendations

The recommendations made on the basis of this study are two in kind: additional research and program action by postsecondary education administrators.

The findings of this study are sufficiently suggestive to warrant more research.

1. One of the key findings of this study--that programmatic variables do make a difference in student GPA persistence and changes in locus of control--is particularly intriguing. Moreover, no individual programmatic variable contributed a significant amount of variance in any of the criterion variables. One obvious explanation of this finding is to emphasize the small number

of remedial programs with any of the programmatic variables under consideration in this investigation. Consistent with this emphasis, the recommendation is to expand this study to include more students in urban schools with remedial programs that have different combinations of the programmatic variables examined in this investigation. This type of study would provide for more and different combinations of the programmatic variables used in this study as well as the opportunity to include additional predictors. Such an investigation would allow for greater discrimination among the programmatic variables in order to ascertain the more powerful predictors as well as the interaction effects among them. Ultimately, however, research may need to go beyond this point.

The variables specified in this study are rather broad and encapsulate a variety of additional variables. Consequently, student success in remedial programs may well be due to a few crucial variables which may or may not be unique to the programmatic variables isolated for this study. From this perspective, future studies may well concentrate on behavioral variables, e.g., communication networks between faculty and students, problem-solving activities, etc., which may cut across the lines

of the programmatic variables included in the current study. Comparison of behavioral variables and their interactions among a variety of remedial programs using the criteria of GPA persistence and changes in locus of control could identify characteristics of remedial program systems which account for student success more precisely. The empirical data gathered from such studies could then serve as the base for the creation of a theoretical framework to guide future studies.

2. The success of remedial programs cannot be judged solely on the output of one semester. Questions which reflect long term objectives are ultimately more important. How well do former remedial students persist and achieve academically in a vocational or technical curriculum as well as perform on the job, increase their earning power, and receive satisfaction from their work are additional questions that demand a large scale research effort. A longitudinal study which follows students from the time they enter a remedial program until after they have functioned in a work setting for at least six months is a study which remains to be done. The value of this study would be greatly enhanced by having a control group of similar students who do not enroll in remedial programs.

Program recommendations flowing from this study are relatively straightforward. The findings of this study indicate that a student is more likely to achieve a higher GPA persist through one semester and experience a significant decrease in externality of locus of control if he is in a remedial program which includes the programmatic variables investigated in this study. The results of this study, however, only indicate the broad parameters within which a number of unspecified variables are operating to cause student success. The data supplied administrative decision-makers by this study is admittedly broad. Nevertheless, it is clear that programs containing these four variables are going to cause student success even though precise knowledge of the variables at work is unavailable. The present study indicates that students will be more successful in programs that include these four programmatic variables: individualized instruction, which allows a student to move at his own pace with the instructional mode of his own choosing to achieve specified behavioral objectives; volunteer teachers who believe that their students can achieve; program focus on developing a positive self-concept and the integration of academic and vocationa learning experiences so that the student can

perceive the relationship between his occupational aspirations and the verbal and quantitative skills he is in the process of developing. These program recommendations are consistent with and specifically reinforce suggestions made in a previous study of those remedial programs regarded as innovative (Kirk and Roueche, 1973).

Thus this study has identified four programmatic variables which collectively make a difference--in a way that is yet unclear--in the success of remedial students. One educator, decrying the massive number of educationally disadvantaged students who entered open-door postsecondary institutions only to leave after failing again, plaintively asked, "How many times does a door have to revolve before making a revolution?" (Miller, 1972). While gaps are apparent in existing technology as well as in the institutional implementation of what is known, the shape of the coming revolution is becoming more concrete.

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A P P E N D I X A

Texas Education Agency

- STATE BOARD OF EDUCATION
- STATE COMMISSIONER OF EDUCATION
- STATE DEPARTMENT OF EDUCATION

201 East Eleventh Street
Austin, Texas
78701

As a part of his approved research project, Mr. Norman Murphy, a doctoral student in Junior College Administration at The University of Texas at Austin, is required to conduct a study of prevocational (remedial) programs available to vocational-technical students in postsecondary institutions in Texas. His investigation will be under the auspices of the Office of School Surveys in the Department of Educational Administration at The University of Texas.

The study will identify areas within these programs which account for their relative success. It is felt this study will be of value to those interested in the improvement of remedial programs of post-secondary institutions within the State of Texas.

If convenient, please authorize your program director's cooperation in this study. A "Fact Sheet" is enclosed for additional information.

Sincerely,

John R. Guemple
Associate Commissioner for
Occupational Education and
Technology

JRG:NLM:cb

Enclosure

A P P E N D I X B

Your answers to all questions are confidential. Place the completed form in the envelope provided. Then seal it and hand it to the person designated to mail them.

There are three sections of questions. Please complete each section.

Student Characteristics

Please print your name in the space provided. Mark (X) the one space that describes you in each numbered section.

Name: _____

1. Program

   _____ vocational
   _____ technical
   _____ college transfer
   _____ unknown

2. Sex

   _____ male
   _____ female

3. Age

   _____ 18-20
   _____ 21-23
   _____ 24-26
   _____ 27 and above

4. Ethnic Background

   _____ Chicano
   _____ Black
   _____ Anglo

5. Yearly Family Income

   _____ $0-2,999
   _____ $3,000-4,999
   _____ $5,000-7,499
   _____ $7,500 and above

II. Social Attitude Survey

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief; obviously there are no right or wrong answers.

Please answer these items carefully but do not spend too much time on any one item. Be sure to find an answer for every choice. Circle the letter representing the statement which you choose as the more true of the pair.

In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned. Also try to respond to each item independently when making your choice; do not be influenced by your previous choices.

1. a. Children get into trouble because their parents punish them too much.
   b. The trouble with most children nowadays is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to bad luck.
   b. People's misfortunes result from the mistakes they make.

3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
   b. There will always be wars, no matter how hard people try to prevent them.

4. a. In the long run people get the respect they deserve in this world.
   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. a. The idea that teachers are unfair to students is nonsense.
   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks one cannot be an effective leader.
   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try some people just don't like you.
   b. People who can't get others to like them just don't understand how to get along with others.

8. a. Heredity plays the major role in determining one's personality.
   b. It is one's experiences in life which determine what they're like.

9. a. I have often found that what is going to happen will happen.
   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. a. In the case of the well-prepared student there is rarely if ever such a thing as an unfair test.
    b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
    b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence in government decisions.
    b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. When I make plans, I am almost certain that I can make them work.
    b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. a. There are certain people who are just no good.
    b. There is some good in everybody.

15. a. In my case getting what I want has little or nothing to do with luck.
    b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
    b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.
    b. By taking an active part in political and social affairs the people can control world events.

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
    b. There really is no such thing as "luck."

19. a. One should always be willing to admit mistakes.
    b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.
    b. How many friends you have depends on how nice a person you are.

21. a. In the long run the bad things that happen to us are balanced by the good ones.
    b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. a. With enough effort we can wipe out political corruption.
    b. It is difficult for people to have much control over the things politicians do in office.

23. a. Sometimes I can't understand how teachers arrive at the grades they give.
    b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.
    b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.
    b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don't try to be friendly.
    b. There's not much use in trying too hard to please people, if they like you.

27. a. There is too much emphasis on athletics in high school.
    b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.
    b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. a. Most of the time I can't understand why politicians behave the way they do.
    b. In the long run the people are responsible for bad government on a national as well as on a local level.

III. POST HIGH SCHOOL SELF-CONCEPT OF ABILITY SCALE

In each of the following questions circle the letter in front of the statement which best answers each question.

1. How do you rate yourself in school ability compared with other students your age in a community college?

   a. I am the best
   b. I am above average
   c. I am average
   d. I am below average
   e. I am among the poorest

2. What kind of grades do you think you are capable of getting in a community college?

   a. mostly A's
   b. mostly B's
   c. mostly C's
   d. mostly D's
   e. mostly F's

3. For those community courses you are interested in, how well do you feel you have the ability to do?

   a. among the best
   b. above average
   c. about average
   d. probably below average
   e. among the poorest

4. Where do you think you would rank in a community college graduating class?

   a. among the best
   b. above average
   c. average
   d. below average
   e. among the poorest

5. How do you rate yourself in scholastic ability as compared to those who have elected not to go beyond high school?

   a. I am the best
   b. I am above average
   c. I am average
   d. I am below average
   e. I am the poorest

6. How do you rate yourself in scholastic ability as compared to those who have elected to go beyond high school?

a. among the best
b. above average
c. average
d. below average
e. among the poorest

7. How do you rate yourself in scholastic ability compared to those who are majoring in a pre profession such as law, medicine, dentistry or curriculum at a college or university?

a. among the best
b. above average
c. average
d. below average
e. among the poorest

8. Do you think you have the ability to attend a graduate school?

a. yes, definitely
b. yes, probably
c. not sure either way
d. probably not
e. no

9. Do you think you have the ability to complete graduate school?

a. yes, definitely
b. yes, probably
c. not sure either way
d. probably not
e. no

10. Where do you think you would rank in your class in graduate school?

a. among the best
b. above average
c. average
d. below average
e. among the poorest

11. Forget for a moment how others might grade you. If you attended graduate school, in your opinion, how good do you think your work would be?

    a. among the best
    b. above average
    c. average
    d. below average
    e. among the poorest

12. What do you think would be your class rank in comparison with the majors in professional schools, such as law, medicine, dentistry?

    a. among the best
    b. above average
    c. average
    d. below average
    e. among the poorest

A P P E N D I X C

INSTRUCTIONAL QUESTIONNAIRE

Background:

The Office of School Surveys at The University of Texas is under contract to the Texas Education Agency to study remedial programs in which vocational and technical students are enrolled. One of the questions we are seeking to answer is the contribution, if any, certain instructional practices make toward student "success" in these programs. This questionnaire originated from the Community College Project sponsored by the National Institute of Mental Health through The University of Texas.

Instructions

Please check yes or no to each question. Please attach course syllabus handed to students at the beginning of the course and one unit of instruction with the test items--if available.

Your responses will remain confidential, used only in this project.

Thanks

for your cooperation which is so crucial for the completion of this project.

Please

have a cup of hot chocolate while filling out this form!

INSTRUCTIONAL QUESTIONNAIRE

		Yes	No
A.	**Objectives**		
1.	General course goals are communicated in writing to the students.	___	___
2.	Behaviorally stated terminal objectives are communicated in writing to the students.	___	___
3.	Behaviorally stated unit objectives are communicated in writing to the students.	___	___
4.	Objectives are written in at least two of the following domains: cognitive (mental skills); affective (changes in feelings or attitudes); psychomotor (manual skills).	___	___
5.	At least 50% of the specific course objectives involve skills that require more than student memorization of subject content.	___	___
B.	**Testing**		
1.	Test items are developed from the stated course objectives.	___	___
2.	Students have the option of taking a comprehensive course final exam if they feel that they have sufficient skills to be exempted from the course.	___	___
3.	A pretest on unit objectives is given to determine if a student may be exempted from an entire unit or from a portion of the unit objectives.		
4.	Evaluation results are reported according to objectives mastered rather than as an average letter or number grade.	___	___
5.	For each unit there is an established standard of acceptable learner performance on the objectives that must be met prior to a student's moving on to the next instructional unit.	___	___
6.	Students are tested on necessary prerequisite course skills and are provided materials necessary to remedy deficiencies.	___	___
7.	There is opportunity for a student to evaluate his own achievement of objectives.	___	___
C.	**Learning Activities**		
1.	There are at least three different modes of instruction employed on a regular basis in communicating course content to the students.	___	___
2.	Learning activities involve frequent practice for the students in the stated unit objectives prior to the formal evaluation situation.	___	___

	Yes	No
3. More than 50% of the course objectives have two or more learning activities available to the students to aid them in mastering the course objectives.	___	___

D. Revision of Course Materials

1. There is a systematic method employed for obtaining information on student error rate on practice items and on unit tests which is used in revising course materials.	___	___
2. There is information gathered concerning the students' opinion of the content of the course which is used in revising course content.	___	___
3. New information regarding course subject matter is used in revising the course content at least every two years.	___	___
4. Information is gathered on the students' opinion of the methods of instruction employed in the course which is used in revising instructional activities.	___	___

E. Time for Learning

1. Students are not required to take course tests at the same time.	___	___
2. Students are allowed to restudy unmastered course objectives and retake tests to attain mastery.	___	___
3. Students may receive an "in progress" or "incomplete" grade at the end of the institucional grading period and be allowed to continue working to master course objectives.	___	___
4. Students may complete a course prior to the end of the institutional grading period.	___	___

F. Content of Course

1. Student input as to topics for subject content is included in the course design.	___	___
2. Students have a choice as to the content "their" course will contain by being allowed to contract with the instructor for mutually agreed upon objectives.	___	___

G. Tutoring

1. The instructor is available on a one-to-one basis to any student needing academic help.	___	___
2. A paraprofessional or a student tutor is available to students needing academic help.	___	___

A P P E N D I X D

	Individualized Instruction[1]	Focus on Self-Concept Development	Volunteer Instructors	Integrated Academic Learning Experiences
Remedial Program A	Yes (22.0)	No	Yes	No
Remedial Program B	No (17.0)	No	No	No
Remedial Program C	No (18.2)	Yes	Yes	Yes
Remedial Program D	No (15.7)	No	No	No

[1]The mean score of each program's instructors on the Instructional Questionnaire is in parentheses following the "Yes" or "No."

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